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18 UNITED STATES DISTRICT COURT  
19 NORTHERN DISTRICT OF CALIFORNIA

20 UNITED STATES OF AMERICA,

21 Plaintiff,

22 v.

23 CTS PRINTEX, INC. and  
24 ADN CORPORATION,

25 Defendants.

Civil Action No. 14-CV-256-LHK

CONSENT DECREE

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## I. BACKGROUND

A. The United States of America (“United States”), on behalf of the Administrator of the United States Environmental Protection Agency (“EPA”), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), 42 U.S.C. §§ 9606, 9607.

B. The United States in its complaint seeks, *inter alia*: (1) reimbursement of costs incurred by EPA and the Department of Justice (“DOJ”) for response actions at the CTS Printex Superfund Site in Mountain View, California, together with accrued interest; and (2) performance of response actions by the defendants at the Site consistent with the National Contingency Plan (“NCP”), 40 C.F.R. Part 300.

C. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of California (the “State”) via the California Regional Water Quality Control Board for the San Francisco Bay Region (“Regional Board”) on October 11, 2011, of negotiations with potentially responsible parties (“PRPs”) regarding the implementation of the remedial design and remedial action for the Site. On November 26, 2012, EPA provided further notice of the planned negotiations to the California Department of Toxic Substances Control and the Regional Board. EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree.

D. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the United States Fish & Wildlife Service on November 19, 2012, of negotiations with PRPs regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this Consent Decree.

E. The defendants that have entered into this Consent Decree (“Settling Defendants”) do not admit any liability to Plaintiff arising out of the transactions or occurrences alleged in the complaint, nor do they acknowledge that the release or threatened release of hazardous substance(s) at or from the Site constitutes an imminent and substantial endangerment to the public health or welfare or the environment.

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1 F. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on  
2 the National Priorities List (“NPL”), set forth at 40 C.F.R. Part 300, Appendix B, by publication  
3 in the Federal Register on February 21, 1990, 55 Fed. Reg. 6154.

4 G. On June 28, 1991, a Record of Decision was issued for the Site, with a remedy  
5 consisting primarily of groundwater pumping from extraction wells, disposal of contaminated  
6 groundwater to the sanitary sewer for treatment at the City of Mountain View’s wastewater  
7 treatment plant, and groundwater monitoring.

8 H. In 2010, in response to a release or a threat of a release of a hazardous substance,  
9 EPA commenced a Supplemental Remedial Investigation (“RI”) and Focused Feasibility Study  
10 (“FS”) for Groundwater and Vapor Intrusion for the Site. EPA completed the RI and FS for the  
11 Site in May 2011.

12 I. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of  
13 the completion of the FS and of the proposed plan for remedial action on June 3, 2011, in a  
14 major local newspaper of general circulation. EPA provided an opportunity for written and oral  
15 comments from the public on the proposed plan for remedial action. A copy of the transcript of  
16 the public meeting is available to the public as part of the administrative record upon which the  
17 Assistant Director of the Superfund Division, EPA Region 9, as the delegate for the Regional  
18 Administrator, based the selection of the response action.

19 J. The decision by EPA on additional remedial action to be implemented at the Site  
20 is embodied in a Record of Decision Amendment (“ROD Amendment”), executed on September  
21 30, 2011, on which the State gave its concurrence. The ROD Amendment includes EPA’s  
22 explanation for any significant differences between the final plan and the proposed plan, as well  
23 as a responsiveness summary to the public comments. Notice of the final plan was published in  
24 accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

25 K. Based on the information presently available to EPA, EPA believes that the Work  
26 will be properly and promptly conducted by Settling Defendants if conducted in accordance with  
27 the requirements of this Consent Decree and its appendices.  
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1 L. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the  
 2 remedy set forth in the ROD Amendment and the Work to be performed by Settling Defendants  
 3 shall constitute a response action taken or ordered by the President for which judicial review  
 4 shall be limited to the administrative record.

5 M. The Parties recognize, and the Court by entering this Consent Decree finds, that  
 6 this Consent Decree has been negotiated by the Parties in good faith and implementation of this  
 7 Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated  
 8 litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public  
 9 interest.

10 NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

## 11 II. JURISDICTION

12 1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C.  
 13 §§ 1331, and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal  
 14 jurisdiction over Settling Defendants. Solely for the purposes of this Consent Decree and the  
 15 underlying complaint, Settling Defendants waive all objections and defenses that they may have  
 16 to jurisdiction of the Court or to venue in this District. Settling Defendants shall not challenge  
 17 the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent  
 18 Decree.

## 19 III. PARTIES BOUND

20 2. This Consent Decree applies to and is binding upon the United States and upon  
 21 Settling Defendants and their successors and assigns. Any change in ownership or corporate  
 22 status of a Settling Defendant including, but not limited to, any transfer of assets or real or  
 23 personal property, shall in no way alter such Settling Defendant's responsibilities under this  
 24 Consent Decree.

25 3. Settling Defendants shall provide a copy of this Consent Decree to each contractor  
 26 hired to perform the Work required by this Consent Decree and to each person representing any  
 27 Settling Defendant with respect to the Site or the Work, and shall condition all contracts entered  
 28 into hereunder upon performance of the Work in conformity with the terms of this Consent

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Decree. Settling Defendants or their contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work required by this Consent Decree. Settling Defendants shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work in accordance with the terms of this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with Settling Defendants within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

#### IV. DEFINITIONS

4. Unless otherwise expressly provided in this Consent Decree, terms used in this Consent Decree that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or its appendices, the following definitions shall apply solely for purposes of this Consent Decree:

“CERCLA” shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.

“Consent Decree” shall mean this Consent Decree and all appendices attached hereto (listed in Section XXVIII). In the event of conflict between this Consent Decree and any appendix, this Consent Decree shall control.

“Day” or “day” shall mean a calendar day unless expressly stated to be a working day. The term “working day” shall mean a day other than a Saturday, Sunday, or federal or state holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or state holiday, the period shall run until the close of business of the next working day.

“DOJ” shall mean the United States Department of Justice and its successor departments, agencies, or instrumentalities.

“Effective Date” shall mean the date upon which this Consent Decree is entered by the Court as recorded on the Court docket, or, if the Court instead issues an order approving the Consent Decree, the date such order is recorded on the Court docket.

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1 “EPA” shall mean the United States Environmental Protection Agency and its successor  
2 departments, agencies, or instrumentalities.

3 “EPA Hazardous Substance Superfund” shall mean the Hazardous Substance Superfund  
4 established by the Internal Revenue Code, 26 U.S.C. § 9507.

5 “Future Response Costs” shall mean all costs, including, but not limited to, direct and  
6 indirect costs, that the United States incurs in reviewing or developing plans, reports, and other  
7 deliverables submitted pursuant to this Consent Decree, in overseeing implementation of the  
8 Work, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but  
9 not limited to, payroll costs, contractor costs, travel costs, laboratory costs, and the costs incurred  
10 pursuant to Sections VII (Remedy Review), IX (Access and Institutional Controls) (including,  
11 but not limited to, the cost of attorney time and any monies paid to secure access and/or to  
12 secure, implement, monitor, maintain, or enforce Institutional Controls including, but not limited  
13 to, the amount of just compensation), XV (Emergency Response), Paragraph 49 (Funding for  
14 Work Takeover), and Section XXIX (Community Involvement). Future Response Costs shall  
15 also include all Interim Response Costs, and all Interest on those Past Response Costs Settling  
16 Defendants have agreed to pay under this Consent Decree that has accrued pursuant to 42 U.S.C.  
17 § 9607(a) during the period from December 31, 2012, to the Effective Date.

18 “Institutional Controls” or “ICs” shall mean Proprietary Controls and state or local laws,  
19 regulations, ordinances, zoning restrictions, or other governmental controls or notices that:

20 (a) limit land, water, and/or resource use to minimize the potential for human exposure to Waste  
21 Material at or in connection with the Site; (b) limit land, water, and/or resource use to  
22 implement, ensure non-interference with, or ensure the protectiveness of the Remedial Action;  
23 and/or (c) provide information intended to modify or guide human behavior at or in connection  
24 with the Site.

25 “Institutional Control Implementation and Assurance Plan” or “ICIAP” shall mean the  
26 plan for implementing, maintaining, monitoring, and reporting on the Institutional Controls set  
27 forth in the ROD Amendment, prepared in accordance with the Statement of Work (“SOW”).  
28

1 “Interim Response Costs” shall mean all costs, including, but not limited to, direct and  
 2 indirect costs, (a) paid by the United States in connection with the Site between December 31,  
 3 2012 and the Effective Date, or (b) incurred prior to the Effective Date but paid after that date.

4 “Interest” shall mean interest at the rate specified for interest on investments of the EPA  
 5 Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on  
 6 October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest  
 7 shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change  
 8 on October 1 of each year.

9 “CTS Printex Special Account” shall mean the special account, within the EPA  
 10 Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3)  
 11 of CERCLA, 42 U.S.C. § 9622(b)(3).

12 “National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous  
 13 Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA,  
 14 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

15 “Operation and Maintenance” or “O&M” shall mean all activities required to maintain  
 16 the effectiveness of the Remedial Action as required under the Operation and Maintenance Plan  
 17 approved or developed by EPA pursuant to Section VI (Performance of the Work by Settling  
 18 Defendants) and the SOW, and maintenance, monitoring, and enforcement of Institutional  
 19 Controls as provided in the ICIAP.

20 “Paragraph” shall mean a portion of this Consent Decree identified by an Arabic numeral  
 21 or an upper or lower case letter.

22 “Parties” shall mean the United States and Settling Defendants.

23 “Past Response Costs” shall mean all costs, including, but not limited to, direct and  
 24 indirect costs, that the United States paid at or in connection with the Site through December 31,  
 25 2012, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a) through  
 26 such date.

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1 “Performance Standards” shall mean the cleanup standards and other measures of  
2 achievement of the goals of the Remedial Action, set forth in the ROD Amendment and the  
3 SOW and any modified standards established pursuant to this Consent Decree.

4 “Plaintiff” shall mean the United States.

5 “Proprietary Controls” shall mean easements or covenants running with the land that  
6 (a) limit land, water, or resource use and/or provide access rights and (b) are created pursuant to  
7 common law or statutory law by an instrument that is recorded by the owner in the appropriate  
8 land records office.

9 “RCRA” shall mean the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992 (also known  
10 as the Resource Conservation and Recovery Act).

11 “Record of Decision Amendment” or “ROD Amendment” shall mean the EPA Record of  
12 Decision relating to the Site signed on September 30, 2011, by the Regional Administrator, EPA  
13 Region 9, or his delegate, and all attachments thereto. The ROD Amendment is attached as  
14 Appendix A.

15 “Remedial Action” shall mean all activities Settling Defendants are required to perform  
16 under the Consent Decree to implement the ROD Amendment, in accordance with the SOW, the  
17 final approved remedial design submission, the approved Remedial Action Work Plan, and other  
18 plans approved by EPA, including implementation of Institutional Controls, until the  
19 Performance Standards are met, and excluding performance of the Remedial Design, O&M, and  
20 the activities required under Section XXV (Retention of Records).

21 “Remedial Action Work Plan” shall mean the document developed pursuant to  
22 Paragraph 11 (Remedial Action for Groundwater and Site-wide Institutional Controls) and  
23 approved by EPA, and any modifications thereto.

24 “Remedial Design” shall mean those activities to be undertaken by Settling Defendants to  
25 develop the final plans and specifications for the Remedial Action pursuant to the Remedial  
26 Design Work Plan.

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1 “Remedial Design Work Plan” shall mean the document developed pursuant to  
2 Paragraph 10 (Remedial Design for Groundwater Remedy and Site-wide Institutional Controls)  
3 and approved by EPA, and any modifications thereto.

4 “SA Work Plan” shall mean the Site-wide Vapor Intrusion Sampling and Analysis Work  
5 Plan for Response Action Tiering developed pursuant to Paragraph 13.a and approved by EPA,  
6 and any modifications thereto.

7 “Section” shall mean a portion of this Consent Decree identified by a Roman numeral.

8 “Settling Defendants” shall mean those Parties identified in Appendix D.

9 “Site” shall mean the CTS Printex Superfund Site, located near the intersection of  
10 Plymouth Street and Sierra Vista Avenue in Mountain View, Santa Clara County, California.  
11 The Site boundaries are defined by the extent of the underlying groundwater contamination and  
12 are depicted generally on the map attached as Appendix C.

13 “Statement of Work” or “SOW” shall mean the statement of work for implementation of  
14 the Remedial Design, Remedial Action, and O&M at the Site, as set forth in Appendix B to this  
15 Consent Decree and any modifications made in accordance with this Consent Decree.

16 “Supervising Contractor” shall mean the principal contractor retained by Settling  
17 Defendants to supervise and direct the implementation of the Work under this Consent Decree.

18 “Transfer” shall mean to sell, assign, convey, lease, mortgage, or grant a security interest  
19 in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest  
20 by operation of law or otherwise.

21 “United States” shall mean the United States of America and each department, agency,  
22 and instrumentality of the United States, including EPA.

23 “VI OMMM Plan” shall mean the Site-wide Vapor Intrusion Operations, Maintenance,  
24 Monitoring and Management Plan for Response Action Tiering developed pursuant to Paragraph  
25 13.c and approved by EPA, and any modifications thereto.

26 “Waste Material” shall mean (1) any “hazardous substance” under Section 101(14) of  
27 CERCLA, 42 U.S.C. § 9601(14); and (2) any pollutant or contaminant under Section 101(33) of  
28 CERCLA, 42 U.S.C. § 9601(33).

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1 “Work” shall mean all activities and obligations Settling Defendants are required to  
 2 perform under this Consent Decree, except the activities required under Section XXV (Retention  
 3 of Records).

#### 4 **V. GENERAL PROVISIONS**

5 5. Objectives of the Parties. The objectives of the Parties in entering into this Consent  
 6 Decree are to protect public health or welfare or the environment by the design and  
 7 implementation of response actions at the Site by Settling Defendants, to pay response costs of  
 8 Plaintiff, and to resolve the claims of Plaintiff against Settling Defendants, as provided in this  
 9 Consent Decree.

#### 10 6. Commitments by Settling Defendants.

11 a. Settling Defendants shall finance and perform the Work in accordance  
 12 with this Consent Decree, the ROD Amendment, the SOW, and all work plans and other plans,  
 13 standards, specifications, and schedules set forth in this Consent Decree or developed by Settling  
 14 Defendants and approved by EPA pursuant to this Consent Decree. Settling Defendants shall  
 15 pay the United States for Past Response Costs and Future Response Costs as provided in this  
 16 Consent Decree.

17 b. The obligations of Settling Defendants to finance and perform the Work,  
 18 including obligations to pay amounts due under this Consent Decree, are joint and several. In the  
 19 event of the insolvency of any Settling Defendant or the failure by any Settling Defendant to  
 20 implement any requirement of this Consent Decree, the remaining Settling Defendants shall  
 21 complete all such requirements.

22 7. Compliance With Applicable Law. All activities undertaken by Settling Defendants  
 23 pursuant to this Consent Decree shall be performed in accordance with the requirements of all  
 24 applicable federal and state laws and regulations. Settling Defendants must also comply with all  
 25 applicable or relevant and appropriate requirements of all federal and state environmental laws as  
 26 set forth in the ROD Amendment and the SOW. The activities conducted pursuant to this  
 27 Consent Decree, if approved by EPA, shall be deemed to be consistent with the NCP.  
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1           8. Permits.

2           a.       As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and  
3 Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work  
4 conducted entirely on-site (i.e., within the areal extent of contamination or in very close  
5 proximity to the contamination and necessary for implementation of the Work). Where any  
6 portion of the Work that is not on-site requires a federal or state permit or approval, Settling  
7 Defendants shall submit timely and complete applications and take all other actions necessary to  
8 obtain all such permits or approvals.

9           b.       Settling Defendants may seek relief under the provisions of Section XVIII  
10 (Force Majeure) for any delay in the performance of the Work resulting from a failure to obtain,  
11 or a delay in obtaining, any permit or approval referenced in Paragraph 8.a and required for the  
12 Work, provided that they have submitted timely and complete applications and taken all other  
13 actions necessary to obtain all such permits or approvals.

14           c.       This Consent Decree is not, and shall not be construed to be, a permit  
15 issued pursuant to any federal or state statute or regulation.

16           **VI. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS**

17           9. Selection of Supervising Contractor.

18           a.       All aspects of the Work to be performed by Settling Defendants pursuant  
19 to Sections VI (Performance of the Work by Settling Defendants), VIII (Quality Assurance,  
20 Sampling, and Data Analysis), IX (Access and Institutional Controls), and XV (Emergency  
21 Response) shall be under the direction and supervision of the Supervising Contractor. Settling  
22 Defendants have selected and EPA has issued a written authorization to proceed regarding hiring  
23 of the following person as Supervising Contractor: Elie Haddad, P.E., Haley & Aldrich Inc. If at  
24 any time hereafter, Settling Defendants propose to change this Supervising Contractor, Settling  
25 Defendants shall give notice to EPA and must obtain a written authorization to proceed from  
26 EPA before the replacement Supervising Contractor performs, directs, or supervises any Work  
27 under this Consent Decree. Settling Defendants shall demonstrate that the proposed replacement  
28 Supervising Contractor has a quality assurance system that complies with ANSI/ASQC E4-1994,

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1 “Specifications and Guidelines for Quality Systems for Environmental Data Collection and  
 2 Environmental Technology Programs” (American National Standard, January 5, 1995), by  
 3 submitting a copy of the proposed contractor’s Quality Management Plan (“QMP”). The QMP  
 4 should be prepared in accordance with “EPA Requirements for Quality Management Plans  
 5 (QA/R-2)” (EPA/240/B-01/002, March 2001, reissued May 2006) or equivalent documentation  
 6 as determined by EPA.

7           b. If EPA disapproves a proposed replacement Supervising Contractor, EPA  
 8 will notify Settling Defendants in writing. Settling Defendants shall then submit to EPA a list of  
 9 contractors, including the qualifications of each contractor, that would be acceptable to them  
 10 within 30 days after receipt of EPA’s disapproval of the replacement Supervising Contractor  
 11 previously proposed. EPA will provide written notice of the names of any contractor(s) that it  
 12 disapproves and an authorization to proceed with respect to any of the other contractors. Settling  
 13 Defendants may select any contractor from that list that is not disapproved and shall notify EPA  
 14 of the name of the replacement Supervising Contractor selected within 21 days after EPA’s  
 15 authorization to proceed.

16           c. If EPA fails to provide written notice of its authorization to proceed or  
 17 disapproval as provided in this Paragraph and this failure prevents Settling Defendants from  
 18 meeting one or more deadlines in a plan approved by EPA pursuant to this Consent Decree,  
 19 Settling Defendants may seek relief under Section XVIII (Force Majeure).

20           10. Remedial Design for Groundwater Remedy and Site-wide Institutional Controls.

21           a. Within 60 days after the Effective Date, Settling Defendants shall submit  
 22 to EPA a work plan for the design of the Remedial Action for Groundwater and Site-wide  
 23 Institutional Controls at the Site (“Remedial Design Work Plan”). The Remedial Design Work  
 24 Plan shall provide for design of the remedy set forth in the ROD Amendment, in accordance with  
 25 the SOW and for achievement of the Performance Standards and other requirements set forth in  
 26 the ROD Amendment, this Consent Decree, and the SOW. Upon its approval by EPA, the  
 27 Remedial Design Work Plan shall be incorporated into and enforceable under this Consent  
 28 Decree. At the same time they submit the Remedial Design Work Plan, Settling Defendants

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1 shall submit to EPA a Health and Safety Plan for field design activities that conforms to the  
2 applicable Occupational Safety and Health Administration and EPA requirements including, but  
3 not limited to, 29 C.F.R. § 1910.120.

4           b.       The Remedial Design Work Plan shall include plans and schedules for  
5 implementation of all remedial design and pre-design tasks identified at Sections 3.1 – 3.2 of the  
6 SOW, including the O&M Plan, in accordance with the schedule set forth at Section 8 of the  
7 SOW (Table 5).

8           c.       Upon approval of the Remedial Design Work Plan by EPA, and  
9 submission of the Health and Safety Plan for all field activities to EPA, Settling Defendants shall  
10 implement the Remedial Design Work Plan. Settling Defendants shall submit to EPA all plans,  
11 reports, and other deliverables required under the approved Remedial Design Work Plan in  
12 accordance with the approved schedule for review and approval pursuant to Section XI (EPA  
13 Approval of Plans, Reports, and Other Deliverables). Unless otherwise directed by EPA,  
14 Settling Defendants shall not commence further Remedial Design activities at the Site prior to  
15 approval of the Remedial Design Work Plan.

16           11. Remedial Action for Groundwater and Site-wide Institutional Controls.

17           a.       Within 30 days after the approval of the Final Design Report submitted  
18 pursuant to Section 3.2.12 of the SOW, Settling Defendants shall submit to EPA a work plan for  
19 the performance of the Remedial Action for groundwater at the Site (“Remedial Action Work  
20 Plan”). The Remedial Action Work Plan shall provide for construction and implementation of  
21 the groundwater remedy set forth in the ROD Amendment and achievement of the Performance  
22 Standards, in accordance with this Consent Decree, the ROD Amendment, the SOW, and the  
23 design plans and specifications developed in accordance with the Remedial Design Work Plan  
24 and approved by EPA. Upon its approval by EPA, the Remedial Action Work Plan shall be  
25 incorporated into and enforceable under this Consent Decree. At the same time as they submit  
26 the Remedial Action Work Plan, Settling Defendants shall submit to EPA a Health and Safety  
27 Plan for field activities required by the Remedial Action Work Plan that conforms to the  
28

1 applicable Occupational Safety and Health Administration and EPA requirements including, but  
2 not limited to, 29 C.F.R. § 1910.120.

3 b. The Remedial Action Work Plan shall include plans and schedules for  
4 implementation of all remedial action tasks identified at Section 3.3.1 of the SOW, including  
5 O&M, in accordance with the schedule set forth at Section 8 of the SOW (Table 5).

6 c. Upon approval of the Remedial Action Work Plan by EPA, Settling  
7 Defendants shall implement the activities required under the Remedial Action Work Plan,  
8 including O&M. Settling Defendants shall submit to EPA all reports and other deliverables  
9 required under the approved Remedial Action Work Plan in accordance with the approved  
10 schedule for review and approval pursuant to Section XI (EPA Approval of Plans, Reports, and  
11 Other Deliverables). Unless otherwise directed by EPA, Settling Defendants shall not  
12 commence physical Remedial Action activities at the Site prior to approval of the Remedial  
13 Action Work Plan.

14 12. Settling Defendants shall continue to implement the Remedial Action until the  
15 Performance Standards are achieved. Settling Defendants shall implement O&M for so long  
16 thereafter as is required by this Consent Decree.

17 13. Site-wide Remedial Design and Remedial Action for Vapor Intrusion. With the  
18 exception of the institutional controls, which will be addressed together with the groundwater  
19 elements in the Site-wide ICIAP, most of the active elements of the vapor intrusion (“VI”)  
20 remedy are contingent on future development or construction at the Site. The remedial design  
21 and remedial action for VI is therefore addressed separately from the remedial design and  
22 remedial action for groundwater in the SOW and this Consent Decree.

23 a. Within 90 days after EPA’s issuance of an authorization to proceed  
24 pursuant to Paragraph 9 (Selection of Supervising Contractor), Settling Defendants shall submit  
25 to EPA a Site-wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action  
26 Tiering (“SA Work Plan”). The SA Work Plan shall provide for sampling, data collection, and  
27 response actions for the vapor intrusion remedy set forth in the ROD Amendment, in accordance  
28 with the SOW and for achievement of the Performance Standards and other requirements set

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1 forth in the ROD Amendment, this Consent Decree, and the SOW. The SA Work Plan shall  
 2 include plans and schedules to complete the elements set forth in Section 4.2 of the SOW, in  
 3 accordance with the schedule set forth at Section 9 of the SOW (Table 6). Upon its approval by  
 4 EPA, the SA Work Plan shall be incorporated into and enforceable under this Consent Decree.

5           b.       Upon approval of the SA Work Plan by EPA, Settling Defendants shall  
 6 implement the SA Work Plan. Settling Defendants shall submit to EPA all plans, reports, and  
 7 other deliverables required under the approved SA Work Plan in accordance with the approved  
 8 schedule for review and approval pursuant to Section XI (EPA Approval of Plans, Reports, and  
 9 Other Deliverables).

10           c.       Sixty days after EPA approves the SA Work Plan, Settling Defendants  
 11 shall submit to EPA a Site-Wide VI Operation, Maintenance, Monitoring, and Management Plan  
 12 (“VI OMMM Plan”) in accordance with Section 4.2.3 of the SOW. Upon its approval by EPA,  
 13 the VI OMMM Plan shall be incorporated into and enforceable under this Consent Decree, and  
 14 Settling Defendants shall implement the VI OMMM Plan.

15           14. Potential Building-Specific Remedial Design and Remedial Action for Vapor  
 16 Intrusion. As set forth in the ROD Amendment and in Sections 4.2.2 and 4.3 of the SOW, any  
 17 planned new construction or major building modification at the Site may necessitate additional  
 18 building-specific remedial design or remedial action work for VI by Settling Defendants.

19           a.       Upon learning of any such construction or modification, EPA may send to  
 20 Settling Defendants written notification that additional analysis of the specified construction or  
 21 modification will be required, as described at Section 4.2.2 of the SOW. Settling Defendants  
 22 shall then carry out that analysis and submit all plans and reports as specified in Section 4.2.2 of  
 23 the SOW.

24           b.       EPA will consider any plans and reports that Settling Defendants submit  
 25 pursuant to Section 4.2.2 of the SOW, and determine whether, under the ROD Amendment,  
 26 remedial design and remedial action is required for the construction or modification described  
 27 therein. EPA will send to Settling Defendants a written notification of its determination. If EPA  
 28 determines that remedial design and remedial action for VI is necessary, Settling Defendants

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1 shall implement that work as described at Sections 4.3 and 4.4 of the SOW. If EPA determines  
2 that remedial design and remedial action for VI appears unnecessary, Settling Defendants shall  
3 perform indoor air sampling after construction is complete as described at Section 4.3 of the  
4 SOW, and shall carry out any remedial design and remedial action for VI that EPA determines is  
5 necessary as a result of that post-construction sampling.

6 15. Modification of SOW or Related Work Plans.

7 a. If EPA determines that it is necessary to modify the work specified in the  
8 SOW and/or in work plans or other related documents developed pursuant to the SOW to  
9 achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of  
10 the remedy set forth in the ROD Amendment, and such modification is consistent with the scope  
11 of the remedy set forth in the ROD Amendment, then EPA may issue such modification in  
12 writing and shall notify Settling Defendants of such modification. For the purposes of this  
13 Paragraph and Paragraphs 51 (Completion of the Remedial Action) and 52 (Completion of the  
14 Work) only, the “scope of the remedy set forth in the ROD Amendment” is: to reduce levels of  
15 Site-related contaminants in the groundwater to levels at or below the cleanup levels selected in  
16 the ROD Amendment, by the means described in Section 12 of the ROD Amendment, and to  
17 prevent human exposure to the Site-related contaminants through contact with contaminated  
18 groundwater or indoor air, by the means described in Section 12 of the ROD Amendment. If  
19 Settling Defendants object to the modification they may, within 30 days after EPA’s notification,  
20 seek dispute resolution under Paragraph 70 (Record Review).

21 b. The SOW and/or related plans approved by EPA shall be modified: (1) in  
22 accordance with the modification issued by EPA; or (2) if Settling Defendants invoke dispute  
23 resolution, in accordance with the final resolution of the dispute. The modification shall be  
24 incorporated into and enforceable under this Consent Decree, and Settling Defendants shall  
25 implement all work required by such modification. Settling Defendants shall incorporate the  
26 modification into the Remedial Design Work Plan under Paragraph 10 (Remedial Design),  
27 Remedial Action Work Plan under Paragraph 11 (Remedial Action), or the SA Work Plan or  
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1 VI OMMM Plan under Paragraph 13 (Site-wide Remedial Design and Remedial Action for  
2 Vapor Intrusion), as appropriate.

3 c. Nothing in this Paragraph shall be construed to limit EPA's authority to  
4 require performance of further response actions as otherwise provided in this Consent Decree.

5 16. Nothing in this Consent Decree, the SOW, the Remedial Design or Remedial Action  
6 Work Plans, the SA Work Plan, or the VI OMMM Plan, constitutes a warranty or representation  
7 of any kind by Plaintiff that compliance with the work requirements set forth in the SOW, the  
8 Work Plans, or any related plans approved by EPA will achieve the Performance Standards.

9 17. Off-Site Shipment of Waste Material.

10 a. Settling Defendants may ship Waste Material from the Site to an off-Site  
11 facility only if they verify, prior to any shipment, that the off-Site facility is operating in  
12 compliance with the requirements of Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and  
13 40 C.F.R. § 300.440, by obtaining a determination from EPA that the proposed receiving facility  
14 is operating in compliance with 42 U.S.C. § 9621(d)(3) and 40 C.F.R. § 300.440.

15 b. Settling Defendants may ship Waste Material from the Site to an out-of-  
16 state waste management facility only if, prior to any shipment, they provide written notice to the  
17 appropriate state environmental official in the receiving facility's state and to the EPA Project  
18 Coordinator. This notice requirement shall not apply to any off-Site shipments when the total  
19 quantity of all such shipments will not exceed ten cubic yards. The written notice shall include  
20 the following information, if available: (1) the name and location of the receiving facility; (2) the  
21 type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the  
22 method of transportation. Settling Defendants also shall notify the state environmental official  
23 referenced above and the EPA Project Coordinator of any major changes in the shipment plan,  
24 such as a decision to ship the Waste Material to a different out-of-state facility. Settling  
25 Defendants shall provide the written notice after the award of the contract for Remedial Action  
26 construction and before the Waste Material is shipped.

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## VII. REMEDY REVIEW

18. Periodic Review. Settling Defendants shall conduct any studies and investigations that EPA requests in order to permit EPA to conduct reviews of whether the Remedial Action is protective of human health and the environment at least every five years as required by Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and any applicable regulations.

19. EPA Selection of Further Response Actions. If EPA determines, at any time, that the Remedial Action is not protective of human health and the environment, EPA may select further response actions for the Site in accordance with the requirements of CERCLA and the NCP.

20. Opportunity To Comment. Settling Defendants and, if required by Sections 113(k)(2) or 117 of CERCLA, 42 U.S.C. § 9613(k)(2) or 9617, the public, will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of the review conducted pursuant to Section 121(c) of CERCLA and to submit written comments for the record during the comment period.

21. Settling Defendants' Obligation To Perform Further Response Actions. If EPA selects further response actions relating to the Site, EPA may require Settling Defendants to perform such further response actions, but only to the extent that the reopener conditions in Paragraph 86 or Paragraph 87 (United States' Pre- and Post-Certification Reservations) are satisfied. Settling Defendants may invoke the procedures set forth in Section XIX (Dispute Resolution) to dispute (a) EPA's determination that the reopener conditions of Paragraph 86 or Paragraph 87 are satisfied, (b) EPA's determination that the Remedial Action is not protective of human health and the environment, or (c) EPA's selection of the further response actions. Disputes pertaining to whether the Remedial Action is protective or to EPA's selection of further response actions shall be resolved pursuant to Paragraph 70 (Record Review).

22. Submission of Plans. If Settling Defendants are required to perform further response actions pursuant to Paragraph 21 (Settling Defendants' Obligation to Perform Further Response Actions), they shall submit a plan for such response action to EPA for approval in accordance with the procedures of Section VI (Performance of the Work by Settling Defendants). Settling Defendants shall implement the approved plan in accordance with this Consent Decree.

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## VIII. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

### 23. Quality Assurance.

a. Settling Defendants shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples in accordance with “EPA Requirements for Quality Assurance Project Plans (QA/R5)” (EPA/240/B-01/003, March 2001, reissued May 2006), “Guidance for Quality Assurance Project Plans (QA/G-5)” (EPA/240/R-02/009, December 2002), and subsequent amendments to such guidelines upon notification by EPA to Settling Defendants of such amendment. Amended guidelines shall apply only to procedures conducted after such notification.

b. Prior to the commencement of any monitoring project under this Consent Decree, Settling Defendants shall submit to EPA for approval a Quality Assurance Project Plan (“QAPP”) that is consistent with the SOW, the NCP, and applicable guidance documents. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Consent Decree. Settling Defendants shall ensure that EPA personnel and its authorized representatives are allowed access at reasonable times to all laboratories utilized by Settling Defendants in implementing this Consent Decree. In addition, Settling Defendants shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Settling Defendants shall ensure that the laboratories they utilize for the analysis of samples taken pursuant to this Consent Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods that are documented in the “USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4,” and the “USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2,” and any amendments made thereto during the course of the implementation of this Consent Decree; however, upon approval by EPA Settling Defendants may use other analytical methods that are as stringent as or more stringent than the CLP-approved methods. Settling Defendants shall ensure that all laboratories they use for analysis of samples taken pursuant to this Consent Decree participate in an EPA or

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1 EPA-equivalent quality assurance/quality control (“QA/QC”) program. Settling Defendants  
2 shall use only laboratories that have a documented Quality System that complies with  
3 ANSI/ASQC E4-1994, “Specifications and Guidelines for Quality Systems for Environmental  
4 Data Collection and Environmental Technology Programs” (American National Standard,  
5 January 5, 1995), and “EPA Requirements for Quality Management Plans (QA/R-2)”  
6 (EPA/240/B-01/002, March 2001, reissued May 2006) or equivalent documentation as  
7 determined by EPA. EPA may consider laboratories accredited under the National  
8 Environmental Laboratory Accreditation Program (“NELAP”) as meeting the Quality System  
9 requirements. Settling Defendants shall ensure that all field methodologies utilized in collecting  
10 samples for subsequent analysis pursuant to this Consent Decree are conducted in accordance  
11 with the procedures set forth in the QAPP approved by EPA.

12 24. Upon request, Settling Defendants shall allow split or duplicate samples to be taken  
13 by EPA or their authorized representatives. Settling Defendants shall notify EPA not less than  
14 21 days in advance of any sample collection activity unless shorter notice is agreed to by EPA.  
15 In addition, EPA shall have the right to take any additional samples that EPA deems necessary.  
16 Upon request, EPA shall allow Settling Defendants to take split or duplicate samples of any  
17 samples they take as part of Plaintiff’s oversight of Settling Defendants’ implementation of the  
18 Work.

19 25. Settling Defendants shall submit to EPA two copies of the results of all sampling  
20 and/or tests or other data obtained or generated by or on behalf of Settling Defendants with  
21 respect to the Site and/or the implementation of this Consent Decree unless EPA agrees  
22 otherwise.

23 26. Notwithstanding any provision of this Consent Decree, the United States retains all of  
24 its information gathering and inspection authorities and rights, including enforcement actions  
25 related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

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**IX. ACCESS AND INSTITUTIONAL CONTROLS**

27. If the Site, or any other real property where access or land/water use restrictions are needed to achieve the remedy set forth in the ROD Amendment, is owned or controlled by any of Settling Defendants:

a. such Settling Defendants shall, commencing on the date of lodging of the Consent Decree, provide the United States and the other Settling Defendants, and their representatives, contractors, and subcontractors, with access at all reasonable times to the Site, or such other real property, to conduct any activity regarding the Consent Decree including, but not limited to, the following activities:

- (1) Monitoring the Work;
- (2) Verifying any data or information submitted to the United States;
- (3) Conducting investigations regarding contamination at or near the Site;
- (4) Obtaining samples;
- (5) Assessing the need for, planning, or implementing additional response actions at or near the Site;
- (6) Assessing implementation of quality assurance and quality control practices as defined in the approved CQAP;
- (7) Implementing the Work pursuant to the conditions set forth in Paragraph 100 (Work Takeover);
- (8) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants or their agents, consistent with Section XXIV (Access to Information);
- (9) Determining whether the Site or other real property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted under the Consent Decree; and

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(10) Implementing, monitoring, maintaining, reporting on, and enforcing any Institutional Controls and the requirements of the ICIAP, as set forth in the SOW.

b. commencing on the date of lodging of the Consent Decree, such Settling Defendants shall not use the Site, or such other real property, in any manner that EPA determines will pose an unacceptable risk to human health or to the environment due to exposure to Waste Material or interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action.

28. If the Site, or any other real property where access or land/water use restrictions are needed to achieve the remedy set forth in the ROD Amendment, is owned or controlled by persons other than any Settling Defendant:

a. Upon EPA's written notification to Settling Defendants that access and/or land/water use restrictions on a particular property are needed, Settling Defendants shall use best efforts to secure from the persons owning or controlling such property:

(1) an agreement to provide access thereto for the United States and Settling Defendants, and their representatives, contractors, and subcontractors, to conduct any activity regarding the Consent Decree including, but not limited to, the activities listed in Paragraph 27.a;

(2) an agreement, enforceable by Settling Defendants and the United States, to refrain from using such property, in any manner that EPA determines will pose an unacceptable risk to human health or to the environment due to exposure to Waste Material or interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action. The agreement shall include, but not be limited to, the land/water use restrictions listed in Paragraph 27.b; and

(3) the execution and recordation in the appropriate land records office of Proprietary Controls, that (i) grant a right of access to conduct any activity regarding the Consent Decree including, but not limited to, those activities listed in Paragraph 27.a, and (ii) grant the right to enforce the land/water use restrictions set forth

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1 in Paragraph 27.b, including, but not limited to, the specific restrictions listed therein  
2 and any land/water use restrictions listed in the ICIAP. The Proprietary Controls shall  
3 be granted to one or more of the following persons, as determined by EPA: (i) the  
4 United States, on behalf of EPA, and its representatives, (ii) the State and its  
5 representatives, (iii) Settling Defendants and their representatives, and/or (iv) other  
6 appropriate grantees. The Proprietary Controls, other than those granted to the United  
7 States, shall include a designation that EPA and/or the State, as appropriate, is a third  
8 party beneficiary, allowing EPA to maintain the right to enforce the Proprietary Controls  
9 without acquiring an interest in real property.

10 b. Within 90 days after EPA's written notification to Settling Defendants that  
11 access and/or land/water use restrictions on a particular property are needed, Settling Defendants  
12 shall submit to EPA for review and approval regarding such property: (i) draft Proprietary  
13 Controls that are enforceable under state law; and (ii) a current title insurance commitment, or  
14 other evidence of title acceptable to EPA that shows title to the land affected by the Proprietary  
15 Controls to be free and clear of all prior liens and encumbrances (except when EPA waives the  
16 release or subordination of such prior liens or encumbrances or when, despite best efforts,  
17 Settling Defendants are unable to obtain release or subordination of such prior liens or  
18 encumbrances).

19 c. Within 15 days of EPA's approval and acceptance of the Proprietary  
20 Controls and the title evidence, Settling Defendants shall update the title search and, if it is  
21 determined that nothing has occurred since the effective date of the commitment, or other title  
22 evidence, to affect the title adversely, record the Proprietary Controls with the appropriate land  
23 records office. Within 60 days after the recording of the Proprietary Controls, Settling  
24 Defendants shall provide EPA with a final title insurance policy, or other final evidence of title  
25 acceptable to EPA, and a certified copy of the original recorded Proprietary Controls showing  
26 the clerk's recording stamps. If the Proprietary Controls are to be conveyed to the United States,  
27 the Proprietary Controls and title evidence (including final title evidence) shall be prepared in  
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1 accordance with the U.S. Department of Justice Title Standards 2001, and approval of the  
2 sufficiency of title shall be obtained as required by 40 U.S.C. § 3111.

3 29. For purposes of Paragraphs 28.a and 28.b, “best efforts” includes the payment of  
4 reasonable sums of money to obtain access, an agreement to restrict land/water use, Proprietary  
5 Controls, and/or an agreement to release or subordinate a prior lien or encumbrance. If, within  
6 45 days after EPA’s written notification that access and/or land/water use restrictions are needed  
7 on a particular property, Settling Defendants have not: (a) obtained agreements to provide  
8 access, restrict land/water use, or record Proprietary Controls, as required by Paragraphs 28.a and  
9 28.b; or (b) obtained, pursuant to Paragraph 28.b, agreements from the holders of prior liens or  
10 encumbrances to release or subordinate such liens or encumbrances to the Proprietary Controls,  
11 Settling Defendants shall promptly notify the United States in writing, and shall include in that  
12 notification a summary of the steps that Settling Defendants have taken to attempt to comply  
13 with Paragraphs 28.a and 28.b. The United States may, as it deems appropriate, assist Settling  
14 Defendants in obtaining access, agreements to restrict land/water use, Proprietary Controls, or  
15 the release or subordination of a prior lien or encumbrance. Settling Defendants shall reimburse  
16 the United States under Section XVI (Payments for Response Costs) for all costs incurred, direct  
17 or indirect, by the United States in obtaining such access, agreements to restrict land/water use,  
18 Proprietary Controls, and/or the release/subordination of prior liens or encumbrances including,  
19 but not limited to, the cost of attorney time and the amount of monetary consideration paid for  
20 just compensation.

21 30. If EPA determines that Institutional Controls in the form of state or local laws,  
22 regulations, ordinances, zoning restrictions, or other governmental controls are needed at or in  
23 connection with the Site, Settling Defendants shall cooperate with EPA’s efforts to secure and  
24 ensure compliance with such governmental controls.

25 31. Notwithstanding any provision of the Consent Decree, the United States retains all of  
26 its access authorities and rights, as well as all of its rights to require Institutional Controls,  
27 including enforcement authorities related thereto, under CERCLA, RCRA, and any other  
28 applicable statute or regulations.

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**X. REPORTING REQUIREMENTS**

32. In addition to any other requirement of this Consent Decree, including but not limited to reports required under Section 1.5 of the SOW, Settling Defendants shall submit to EPA one electronic and two hard copies of written bi-monthly progress reports that: (a) describe the actions that have been taken toward achieving compliance with this Consent Decree during the previous two months; (b) include a summary of all results of sampling and tests and all other data received or generated by Settling Defendants or their contractors or agents in the previous two months; (c) identify all plans, reports, and other deliverables required by this Consent Decree completed and submitted during the previous two months; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, that are scheduled for the next three months and provide other information relating to the progress of construction, including, but not limited to, critical path diagrams, Gantt charts and Pert charts; (e) include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the work plans or other schedules that Settling Defendants have proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Involvement Plan during the previous two months and those to be undertaken in the next three months. Settling Defendants shall submit these progress reports to EPA by the tenth day of every other month, with the first report due the month following the lodging of this Consent Decree, until EPA notifies Settling Defendants pursuant to Paragraph 52.b of Section XIV (Certification of Completion). If requested by EPA, Settling Defendants shall also provide briefings for EPA to discuss the progress of the Work.

33. Settling Defendants shall notify EPA of any change in the schedule described in the bi-monthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than seven days prior to the performance of the activity.

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34. Upon the occurrence of any event during performance of the Work that Settling Defendants are required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act ("EPCRA"), 42 U.S.C. § 11004, Settling Defendants shall within 24 hours of the onset of such event orally notify the EPA Project Coordinator or the Alternate EPA Project Coordinator (in the event of the unavailability of the EPA Project Coordinator), or, in the event that neither the EPA Project Coordinator nor Alternate EPA Project Coordinator is available, the Emergency Response Section, Region 9, United States Environmental Protection Agency. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

35. Within 20 days after the onset of such an event, Settling Defendants shall furnish to EPA a written report, signed by Settling Defendants' Project Coordinator, setting forth the events that occurred and the measures taken, and to be taken, in response thereto. Within 30 days after the conclusion of such an event, Settling Defendants shall submit a report setting forth all actions taken in response thereto.

36. Settling Defendants shall submit one electronic and two hard copies of all plans, reports, data, and other deliverables required by the SOW, the Remedial Design Work Plan, the Remedial Action Work Plan, or any other approved plans to EPA in accordance with the requirements of the SOW and on the schedules set forth in such plans. Upon request by EPA, Settling Defendants shall submit in electronic form all or any portion of any deliverables Settling Defendants are required to submit pursuant to the provisions of this Consent Decree.

37. All deliverables submitted by Settling Defendants to EPA that purport to document Settling Defendants' compliance with the terms of this Consent Decree shall be signed by an authorized representative of Settling Defendants.

## **XI. EPA APPROVAL OF PLANS, REPORTS, AND OTHER DELIVERABLES**

### **38. Initial Submissions.**

a. After review of any plan, report, or other deliverable that is required to be submitted for approval pursuant to this Consent Decree, EPA shall: (1) approve, in whole or in

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part, the submission; (2) approve the submission upon specified conditions; (3) disapprove, in whole or in part, the submission; or (4) any combination of the foregoing.

b. EPA also may modify the initial submission to cure deficiencies in the submission if: (1) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work; or (2) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable plan, report, or deliverable.

39. Resubmissions. Upon receipt of a notice of disapproval under Paragraph 38.a(3) or (4), or if required by a notice of approval upon specified conditions under Paragraph 38.a(2), Settling Defendants shall, within 45 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other deliverable for approval. After review of the resubmitted plan, report, or other deliverable, EPA may: (a) approve, in whole or in part, the resubmission; (b) approve the resubmission upon specified conditions; (c) modify the resubmission; (d) disapprove, in whole or in part, the resubmission, requiring Settling Defendants to correct the deficiencies; or (e) any combination of the foregoing.

40. Material Defects. If an initially submitted or resubmitted plan, report, or other deliverable contains a material defect, and the plan, report, or other deliverable is disapproved or modified by EPA under Paragraph 38.b(2) or 39 due to such material defect, then the material defect shall constitute a lack of compliance for purposes of Paragraph 73. The provisions of Section XIX (Dispute Resolution) and Section XX (Stipulated Penalties) shall govern the accrual and payment of any stipulated penalties regarding Settling Defendants' submissions under this Section.

41. Implementation. Upon approval, approval upon conditions, or modification by EPA under Paragraph 38 (Initial Submissions) or Paragraph 39 (Resubmissions), of any plan, report, or other deliverable, or any portion thereof: (a) such plan, report, or other deliverable, or portion thereof, shall be incorporated into and enforceable under this Consent Decree; and (b) Settling Defendants shall take any action required by such plan, report, or other deliverable, or portion

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thereof, subject only to their right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by EPA. The implementation of any non-deficient portion of a plan, report, or other deliverable submitted or resubmitted under Paragraph 38 or 39 shall not relieve Settling Defendants of any liability for stipulated penalties under Section XX (Stipulated Penalties).

## **XII. PROJECT COORDINATORS**

42. Within 10 days after lodging this Consent Decree, Settling Defendants and EPA will notify each other, in writing, of the name, address, telephone number, and email address of their respective designated Project Coordinators and Alternate Project Coordinators. If a Project Coordinator or Alternate Project Coordinator initially designated is changed, the identity of the successor will be given to the other Parties at least five working days before the change occurs, unless impracticable, but in no event later than the actual day the change is made. Settling Defendants' Project Coordinator shall be subject to disapproval by EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. Settling Defendants' Project Coordinator shall not be an attorney for any Settling Defendant in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

43. Plaintiff may designate other representatives, including, but not limited to, EPA employees and federal contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and an On-Scene Coordinator ("OSC") by the NCP, 40 C.F.R. Part 300. EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the NCP, to halt any Work required by this Consent Decree and to take any necessary response action when he or she determines that conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of Waste Material.

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1 44. Until EPA issues a Certification of Completion of the Remedial Action, the EPA  
 2 Project Coordinator and Settling Defendants' Project Coordinator will meet, at a minimum, on a  
 3 monthly basis. After Certification of Completion of the Remedial Action, the EPA Project  
 4 Coordinator and Settling Defendants' Project Coordinator shall meet at the discretion of the EPA  
 5 Project Coordinator. Meetings under this Paragraph may be held in person or by telephone, at  
 6 EPA's discretion.

### 7 **XIII. PERFORMANCE GUARANTEE**

8 45. In order to ensure the full and final completion of the Work, Settling Defendants shall  
 9 establish and maintain a performance guarantee, initially in the amount of \$2,000,000, for the  
 10 benefit of EPA (hereinafter "Estimated Cost of the Work"). The performance guarantee, which  
 11 must be satisfactory in form and substance to EPA, shall be in the form of one or more of the  
 12 following mechanisms (provided that, if Settling Defendants intend to use multiple mechanisms,  
 13 such multiple mechanisms shall be limited to surety bonds guaranteeing payment, letters of  
 14 credit, trust funds, and insurance policies):

15 a. A surety bond unconditionally guaranteeing payment and/or performance  
 16 of the Work that is issued by a surety company among those listed as acceptable sureties on  
 17 federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury;

18 b. One or more irrevocable letters of credit, payable to or at the direction of  
 19 EPA, that is issued by one or more financial institution(s) (1) that has the authority to issue  
 20 letters of credit and (2) whose letter-of-credit operations are regulated and examined by a federal  
 21 or state agency;

22 c. A trust fund established for the benefit of EPA that is administered by a  
 23 trustee (1) that has the authority to act as a trustee and (2) whose trust operations are regulated  
 24 and examined by a federal or state agency;

25 d. A policy of insurance that (1) provides EPA with acceptable rights as a  
 26 beneficiary thereof; and (2) is issued by an insurance carrier (i) that has the authority to issue  
 27 insurance policies in the applicable jurisdiction(s) and (ii) whose insurance operations are  
 28 regulated and examined by a federal or state agency;

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e. A demonstration by one or more Settling Defendants that each such Settling Defendant meets the financial test criteria of 40 C.F.R. § 264.143(f) with respect to the Estimated Cost of the Work (plus the amount(s) of any other federal or any state environmental obligations financially assured through the use of a financial test or guarantee), provided that all other requirements of 40 C.F.R. § 264.143(f) are met to EPA's satisfaction; or

f. A written guarantee to fund or perform the Work executed in favor of EPA by one or more of the following: (1) a direct or indirect parent company of a Settling Defendant, or (2) a company that has a "substantial business relationship" (as defined in 40 C.F.R. § 264.141(h)) with at least one Settling Defendant; provided, however, that any company providing such a guarantee must demonstrate to the satisfaction of EPA that it satisfies the financial test and reporting requirements for owners and operators set forth in subparagraphs (1) through (8) of 40 C.F.R. § 264.143(f) with respect to the Estimated Cost of the Work (plus the amount(s) of any other federal or any state environmental obligations financially assured through the use of a financial test or guarantee) that it proposes to guarantee hereunder.

46. Settling Defendants have selected, and EPA has found satisfactory, as an initial performance guarantee a written guarantee to fund the Work executed in favor of EPA by CTS Corporation pursuant to Paragraph 45.f, in the form attached hereto as Appendix E. Within ten days after the Effective Date, Settling Defendants shall execute or otherwise finalize all instruments or other documents required in order to make the selected performance guarantee(s) legally binding in a form substantially identical to the documents attached hereto as Appendix E, and such performance guarantee(s) shall thereupon be fully effective. Within 30 days after the Effective Date, Settling Defendants shall submit copies of all executed and/or otherwise finalized instruments or other documents required in order to make the selected performance guarantee(s) legally binding to the EPA Regional Financial Management Officer in accordance with Section XXVI (Notices and Submissions), with a copy to Financial Analyst, Superfund Division, 75 Hawthorne Street, San Francisco, California 94105, and to the United States and EPA, as specified in Section XXVI.

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47. If, at any time after the Effective Date and before issuance of the Certification of Completion of the Work pursuant to Paragraph 52, Settling Defendants provide a performance guarantee for completion of the Work by means of a demonstration or guarantee pursuant to Paragraph 45.e or 45.f, the relevant Settling Defendants shall also comply with the other relevant requirements of 40 C.F.R. § 264.143(f) relating to these mechanisms unless otherwise provided in this Consent Decree, including but not limited to: (a) the initial submission of required financial reports and statements from the relevant entity's chief financial officer ("CFO") and independent certified public accountant ("CPA"), in the form prescribed by EPA in its financial test sample CFO letters and CPA reports available at: <http://www.epa.gov/compliance/resources/policies/cleanup/superfund/fa-test-samples.pdf>; (b) the annual resubmission of such reports and statements within 90 days after the close of each such entity's fiscal year; and (c) the prompt notification of EPA after each such entity determines that it no longer satisfies the financial test requirements set forth at 40 C.F.R. § 264.143(f)(1) and in any event within 90 days after the close of any fiscal year in which such entity no longer satisfies such financial test requirements. For purposes of the performance guarantee mechanisms specified in this Section, references in 40 C.F.R. Part 264, Subpart H, to "closure," "post-closure," and "plugging and abandonment" shall be deemed to include the Work; the terms "current closure cost estimate," "current post-closure cost estimate," and "current plugging and abandonment cost estimate" shall be deemed to include the Estimated Cost of the Work; the terms "owner" and "operator" shall be deemed to refer to each Settling Defendant making a demonstration under Paragraph 45.e; and the terms "facility" and "hazardous waste facility" shall be deemed to include the Site.

48. In the event that EPA determines at any time that a performance guarantee provided by any Settling Defendant pursuant to this Section is inadequate or otherwise no longer satisfies the requirements set forth in this Section, whether due to an increase in the estimated cost of completing the Work or for any other reason, or in the event that any Settling Defendant becomes aware of information indicating that a performance guarantee provided pursuant to this Section is inadequate or otherwise no longer satisfies the requirements set forth in this Section,

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whether due to an increase in the estimated cost of completing the Work or for any other reason, Settling Defendants, within 30 days after receipt of notice of EPA's determination or, as the case may be, within 30 days after any Settling Defendant becoming aware of such information, shall obtain and present to EPA for approval a proposal for a revised or alternative form of performance guarantee listed in Paragraph 45 that satisfies all requirements set forth in this Section; provided, however, that if any Settling Defendant cannot obtain such revised or alternative form of performance guarantee within such 30-day period, and provided further that the Settling Defendant shall have commenced to obtain such revised or alternative form of performance guarantee within such 30-day period, and thereafter diligently proceeds to obtain the same, EPA shall extend such period for such time as is reasonably necessary for the Settling Defendant in the exercise of due diligence to obtain such revised or alternative form of performance guarantee, such additional period not to exceed 30 days. In seeking approval for a revised or alternative form of performance guarantee, Settling Defendants shall follow the procedures set forth in Paragraph 50.b(2). Settling Defendants' inability to post a performance guarantee for completion of the Work shall in no way excuse performance of any other requirements of this Consent Decree, including, without limitation, the obligation of Settling Defendants to complete the Work in strict accordance with the terms of this Consent Decree.

49. Funding for Work Takeover. The commencement of any Work Takeover pursuant to Paragraph 90 shall trigger EPA's right to receive the benefit of any performance guarantee(s) provided pursuant to Paragraphs 45.a, 45.b, 45.c, 45.d, or 45.f, and at such time EPA shall have immediate access to resources guaranteed under any such performance guarantee(s), whether in cash or in kind, as needed to continue and complete the Work assumed by EPA under the Work Takeover. Upon the commencement of any Work Takeover, if (a) for any reason EPA is unable to promptly secure the resources guaranteed under any such performance guarantee(s), whether in cash or in kind, necessary to continue and complete the Work assumed by EPA under the Work Takeover, or (b) in the event that the performance guarantee involves a demonstration of satisfaction of the financial test criteria pursuant to Paragraph 45.e or Paragraph 45.f(2), Settling Defendants (or in the case of Paragraph 45.f(2), the guarantor) shall immediately upon written

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1 demand from EPA deposit into a special account within the EPA Hazardous Substance  
 2 Superfund or such other account as EPA may specify, in immediately available funds and  
 3 without setoff, counterclaim, or condition of any kind, a cash amount up to but not exceeding the  
 4 estimated cost of completing the Work as of such date, as determined by EPA. In addition, if at  
 5 any time EPA is notified by the issuer of a performance guarantee that such issuer intends to  
 6 cancel the performance guarantee mechanism it has issued, then, unless Settling Defendants  
 7 provide a substitute performance guarantee mechanism in accordance with this Section no later  
 8 than 30 days prior to the impending cancellation date, EPA shall be entitled (as of and after the  
 9 date that is 30 days prior to the impending cancellation) to draw fully on the funds guaranteed  
 10 under the then-existing performance guarantee. All EPA Work Takeover costs not reimbursed  
 11 under this Paragraph shall be reimbursed under Section XVI (Payments for Response Costs).

12 50. Modification of Amount and/or Form of Performance Guarantee.

13 a. Reduction of Amount of Performance Guarantee. If Settling Defendants  
 14 believe that the estimated cost of completing the Work has diminished below the amount set  
 15 forth in Paragraph 45, Settling Defendants may, on any anniversary of the Effective Date, or at  
 16 any other time agreed to by the Parties, petition EPA in writing to request a reduction in the  
 17 amount of the performance guarantee provided pursuant to this Section so that the amount of the  
 18 performance guarantee is equal to the estimated cost of completing the Work. Settling  
 19 Defendants shall submit a written proposal for such reduction to EPA that shall specify, at a  
 20 minimum, the estimated cost of completing the Work and the basis upon which such cost was  
 21 calculated. In seeking approval for a reduction in the amount of the performance guarantee,  
 22 Settling Defendants shall follow the procedures set forth in Paragraph 50.b(2) for requesting a  
 23 revised or alternative form of performance guarantee, except as specifically provided in this  
 24 Paragraph 50.a. If EPA decides to accept Settling Defendants' proposal for a reduction in the  
 25 amount of the performance guarantee, either to the amount set forth in Settling Defendants'  
 26 written proposal or to some other amount as selected by EPA, EPA will notify the petitioning  
 27 Settling Defendants of such decision in writing. Upon EPA's acceptance of a reduction in the  
 28 amount of the performance guarantee, the Estimated Cost of the Work shall be deemed to be the

1 estimated cost of completing the Work set forth in EPA's written decision. After receiving  
 2 EPA's written decision, Settling Defendants may reduce the amount of the performance  
 3 guarantee in accordance with and to the extent permitted by such written acceptance and shall  
 4 submit copies of all executed and/or otherwise finalized instruments or other documents required  
 5 in order to make the selected performance guarantee(s) legally binding in accordance with  
 6 Paragraph 50.b(2). In the event of a dispute, Settling Defendants may reduce the amount of the  
 7 performance guarantee required hereunder only in accordance with a final administrative or  
 8 judicial decision resolving such dispute pursuant to Section XIX (Dispute Resolution). No  
 9 change to the form or terms of any performance guarantee provided under this Section, other  
 10 than a reduction in amount, is authorized except as provided in Paragraphs 48 or 50.b.

11           b.       Change of Form of Performance Guarantee.

12           (1)       If, after the Effective Date, Settling Defendants desire to change  
 13 the form or terms of any performance guarantee(s) provided pursuant to this Section,  
 14 Settling Defendants may, on any anniversary of the Effective Date, or at any other time  
 15 agreed to by the Parties, petition EPA in writing to request a change in the form or terms  
 16 of the performance guarantee provided hereunder. The submission of such proposed  
 17 revised or alternative performance guarantee shall be as provided in Paragraph 50.b(2).  
 18 Any decision made by EPA on a petition submitted under this Paragraph shall be made  
 19 in EPA's sole and unreviewable discretion, and such decision shall not be subject to  
 20 challenge by Settling Defendants pursuant to the dispute resolution provisions of this  
 21 Consent Decree or in any other forum.

22           (2)       Settling Defendants shall submit a written proposal for a revised or  
 23 alternative performance guarantee to EPA that shall specify, at a minimum, the  
 24 estimated cost of completing the Work, the basis upon which such cost was calculated,  
 25 and the proposed revised performance guarantee, including all proposed instruments or  
 26 other documents required in order to make the proposed performance guarantee legally  
 27 binding. The proposed revised or alternative performance guarantee must satisfy all  
 28 requirements set forth or incorporated by reference in this Section. Settling Defendants

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1 shall submit such proposed revised or alternative performance guarantee to the EPA  
2 Regional Financial Management Officer in accordance with Section XXVI (Notices and  
3 Submissions), with a copy to Financial Analyst, Superfund Division, 75 Hawthorne  
4 Street, San Francisco, California 94105. EPA will notify Settling Defendants in writing  
5 of its decision to accept or reject a revised or alternative performance guarantee  
6 submitted pursuant to this Paragraph. Within ten days after receiving a written decision  
7 approving the proposed revised or alternative performance guarantee, Settling  
8 Defendants shall execute and/or otherwise finalize all instruments or other documents  
9 required in order to make the selected performance guarantee(s) legally binding in a  
10 form substantially identical to the documents submitted to EPA as part of the proposal,  
11 and such performance guarantee(s) shall thereupon be fully effective. Settling  
12 Defendants shall submit copies of all executed and/or otherwise finalized instruments or  
13 other documents required in order to make the selected performance guarantee(s) legally  
14 binding to the EPA Regional Financial Management Officer within 30 days after  
15 receiving a written decision approving the proposed revised or alternative performance  
16 guarantee in accordance with Section XXVI (Notices and Submissions), with a copy to  
17 Financial Analyst, Superfund Division, 75 Hawthorne Street, San Francisco, California  
18 94105, and to the United States and EPA, as specified in Section XXVI.

19 c. Release of Performance Guarantee. Settling Defendants shall not release,  
20 cancel, or discontinue any performance guarantee provided pursuant to this Section except as  
21 provided in this Paragraph. If Settling Defendants receive written notice from EPA in  
22 accordance with Paragraph 52 that the Work has been fully and finally completed in accordance  
23 with the terms of this Consent Decree, or if EPA otherwise so notifies Settling Defendants in  
24 writing, Settling Defendants may thereafter release, cancel, or discontinue the performance  
25 guarantee(s) provided pursuant to this Section. In the event of a dispute, Settling Defendants  
26 may release, cancel, or discontinue the performance guarantee(s) required hereunder only in  
27 accordance with a final administrative or judicial decision resolving such dispute pursuant to  
28 Section XIX (Dispute Resolution).

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#### XIV. CERTIFICATION OF COMPLETION

##### 51. Completion of the Remedial Action.

a. Within 90 days after Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been achieved, Settling Defendants shall schedule and conduct a pre-certification inspection to be attended by Settling Defendants and EPA. If, after the pre-certification inspection, Settling Defendants still believe that the Remedial Action has been fully performed and the Performance Standards have been achieved, they shall submit a written report requesting certification to EPA for approval, pursuant to Section XI (EPA Approval of Plans, Reports, and Other Deliverables) within 30 days after the inspection. In the report, a registered professional engineer and Settling Defendants' Project Coordinator shall state that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The written report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or Settling Defendants' Project Coordinator:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after completion of the pre-certification inspection and receipt and review of the written report, EPA determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, EPA will notify Settling Defendants in writing of the activities that must be undertaken by Settling Defendants pursuant to this Consent Decree to complete the Remedial Action and

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1 achieve the Performance Standards, provided, however, that EPA may only require Settling  
 2 Defendants to perform such activities pursuant to this Paragraph to the extent that such activities  
 3 are consistent with the “scope of the remedy set forth in the ROD Amendment,” as that term is  
 4 defined in Paragraph 15.a. EPA will set forth in the notice a schedule for performance of such  
 5 activities consistent with the Consent Decree and the SOW or require Settling Defendants to  
 6 submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans, Reports,  
 7 and Other Deliverables). Settling Defendants shall perform all activities described in the notice  
 8 in accordance with the specifications and schedules established pursuant to this Paragraph,  
 9 subject to their right to invoke the dispute resolution procedures set forth in Section XIX  
 10 (Dispute Resolution).

11           b.       If EPA concludes, based on the initial or any subsequent report requesting  
 12 Certification of Completion of the Remedial Action, that the Remedial Action has been  
 13 performed in accordance with this Consent Decree and that the Performance Standards have  
 14 been achieved, EPA will so certify in writing to Settling Defendants. This certification shall  
 15 constitute the Certification of Completion of the Remedial Action for purposes of this Consent  
 16 Decree, including, but not limited to, Section XXI (Covenants by Plaintiff). Certification of  
 17 Completion of the Remedial Action shall not affect Settling Defendants’ remaining obligations  
 18 under this Consent Decree.

19           52. Completion of the Work.

20           a.       Within 90 days after Settling Defendants conclude that all phases of the  
 21 Work, other than any remaining activities required under Section VII (Remedy Review), have  
 22 been fully performed, Settling Defendants shall schedule and conduct a pre-certification  
 23 inspection to be attended by Settling Defendants and EPA. If, after the pre-certification  
 24 inspection, Settling Defendants still believe that the Work has been fully performed, Settling  
 25 Defendants shall submit a written report by a registered professional engineer stating that the  
 26 Work has been completed in full satisfaction of the requirements of this Consent Decree. The  
 27 report shall contain the statement set forth in Paragraph 51.a, signed by a responsible corporate  
 28 official of a Settling Defendant or Settling Defendants’ Project Coordinator. If, after review of

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the written report, EPA determines that any portion of the Work has not been completed in accordance with this Consent Decree, EPA will notify Settling Defendants in writing of the activities that must be undertaken by Settling Defendants pursuant to this Consent Decree to complete the Work, provided, however, that EPA may only require Settling Defendants to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the “scope of the remedy set forth in the ROD Amendment,” as that term is defined in Paragraph 15.a. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require Settling Defendants to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans, Reports, and Other Deliverables). Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent request for Certification of Completion of the Work by Settling Defendants, that the Work has been performed in accordance with this Consent Decree, EPA will so notify Settling Defendants in writing.

## **XV. EMERGENCY RESPONSE**

53. If any action or occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Settling Defendants shall, subject to Paragraph 54, immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately notify the EPA’s Project Coordinator, or, if the Project Coordinator is unavailable, EPA’s Alternate Project Coordinator. If neither of these persons is available, Settling Defendants shall notify the EPA Emergency Response Unit, Region 9. Settling Defendants shall take such actions in consultation with EPA’s Project Coordinator or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Settling

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Defendants fail to take appropriate response action as required by this Section, and EPA takes such action instead, Settling Defendants shall reimburse EPA all costs of the response action under Section XVI (Payments for Response Costs).

54. Subject to Section XXI (Covenants by Plaintiff), nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States (a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or (b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site.

#### **XVI. PAYMENTS FOR RESPONSE COSTS**

##### **55. Payment by Settling Defendants for Past Response Costs.**

a. Within 30 days after the Effective Date, Settling Defendants shall pay to EPA \$850,000 in payment for Past Response Costs. Payment shall be made in accordance with Paragraphs 57.a (Instructions for Past Response Cost Payments).

b. The total amount to be paid by Settling Defendants pursuant to Paragraph 55.a shall be deposited by EPA in the CTS Printex Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

56. Payments by Settling Defendants for Future Response Costs. Settling Defendants shall pay to EPA all Future Response Costs not inconsistent with the NCP.

a. On a periodic basis, EPA will send Settling Defendants a bill requiring payment that includes a cost summary, which includes direct and indirect costs incurred by EPA, its contractors, and DOJ. Settling Defendants shall make all payments within 30 days after Settling Defendants' receipt of each bill requiring payment, except as otherwise provided in Paragraph 58, in accordance with Paragraphs 57.b (Instructions for Future Response Cost Payments).



b. The total amount to be paid by Settling Defendants pursuant to Paragraph 56.a shall be deposited by EPA in the CTS Printex Site Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

57. Payment Instructions for Settling Defendants.

a. Instructions for Past Response Costs Payments. All payments required, elsewhere in this Consent Decree, to be made in accordance with this Paragraph 57.a shall be made at <https://www.pay.gov> to the U.S. Department of Justice account, in accordance with instructions provided to Settling Defendants by the Financial Litigation Unit (“FLU”) of the United States Attorney’s Office for the Northern District of California after the Effective Date. The payment instructions provided by the Financial Litigation Unit shall include a Consolidated Debt Collection System (“CDCS”) number, which shall be used to identify all payments required to be made in accordance with this Consent Decree. The FLU shall provide the payment instructions to:

General Counsel  
 CTS Corporation  
 905 West Boulevard North  
 Elkhart, Indiana 46514

on behalf of Settling Defendants. Settling Defendants may change the individual to receive payment instructions on their behalf by providing written notice of such change in accordance with Section XXVI (Notices and Submissions). When making payments under this Paragraph 57.a, Settling Defendants shall also comply with Paragraph 57.c (Instructions for All Payments).

b. Instructions for Future Response Costs Payments and Stipulated Penalties. All payments required, elsewhere in this Consent Decree, to be made in accordance with this Paragraph 57.b shall be made by Fedwire EFT to:

Federal Reserve Bank of New York  
 ABA = 021030004  
 Account = 68010727

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1 SWIFT address = FRNYUS33

2 33 Liberty Street

3 New York NY 10045

4 Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental  
5 Protection Agency"

6 When making payments under this Paragraph 57.b, Settling Defendants shall also comply with  
7 Paragraph 57.c (Instructions for All Payments).

8 c. Instructions for All Payments. All payments made under Paragraphs 57.a  
9 (Instructions for Past Response Cost Payments) or 57.b (Instructions for Future Response Cost  
10 Payments) shall reference the CDCS Number, Site/Spill ID Number 09H5, and DOJ Case  
11 Number 90-11-2-849/1. At the time of any payment required to be made in accordance with  
12 Paragraphs 57.a or 57.b, Settling Defendants shall send notice that payment has been made to the  
13 United States, and to EPA, in accordance with Section XXVI (Notices and Submissions), and to  
14 the EPA Cincinnati Finance Office by email at [acctsreceivable.cinwd@epa.gov](mailto:acctsreceivable.cinwd@epa.gov), or by mail at  
15 26 Martin Luther King Drive, Cincinnati, Ohio 45268. Such notice shall also reference the  
16 CDCS Number, Site/Spill ID Number, and DOJ Case Number.

17 58. Settling Defendants may contest any Future Response Costs billed under  
18 Paragraph 56 (Payments by Settling Defendants for Future Response Costs) if they determine  
19 that EPA has made a mathematical error or included a cost item that is not within the definition  
20 of Future Response Costs, or if they believe EPA incurred excess costs as a direct result of an  
21 EPA action that was inconsistent with a specific provision or provisions of the NCP. Such  
22 objection shall be made in writing within 30 days after receipt of the bill and must be sent to the  
23 United States pursuant to Section XXVI (Notices and Submissions). Any such objection shall  
24 specifically identify the contested Future Response Costs and the basis for objection. In the  
25 event of an objection, Settling Defendants shall pay all uncontested Future Response Costs to the  
26 United States within 30 days after Settling Defendants' receipt of the bill requiring payment.  
27 Simultaneously, Settling Defendants shall establish, in a duly chartered bank or trust company,  
28 an interest-bearing escrow account that is insured by the Federal Deposit Insurance Corporation

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(“FDIC”), and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Settling Defendants shall send to the United States, as provided in Section XXVI (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Settling Defendants shall initiate the Dispute Resolution procedures in Section XIX (Dispute Resolution). If the United States prevails in the dispute, Settling Defendants shall pay the sums due (with accrued interest) to the United States, within five days after the resolution of the dispute. If Settling Defendants prevail concerning any aspect of the contested costs, Settling Defendants shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to the United States within five days after the resolution of the dispute. Settling Defendants shall be disbursed any balance of the escrow account. All payments to the United States under this Paragraph shall be made in accordance with Paragraphs 57.b (Instructions for Future Response Cost Payments). The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIX (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Settling Defendants’ obligation to reimburse the United States for their Future Response Costs.

59. Interest. In the event that any payment for Past Response Costs or for Future Response Costs required under this Section is not made by the date required, Settling Defendants shall pay Interest on the unpaid balance. The Interest to be paid on Past Response Costs under this Paragraph shall begin to accrue on the Effective Date. The Interest on Future Response Costs shall begin to accrue on the date of the bill. The Interest shall accrue through the date of Settling Defendants’ payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiff by virtue of Settling Defendants’ failure to make timely payments under this Section including, but not limited to, payment of stipulated penalties pursuant to Paragraph 74 (Stipulated Penalty Amounts – Work).

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## XVII. INDEMNIFICATION AND INSURANCE

### 60. Settling Defendants' Indemnification of the United States.

a. The United States does not assume any liability by entering into this Consent Decree or by virtue of any designation of Settling Defendants as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). Settling Defendants shall indemnify, save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, and representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Settling Defendants as EPA's authorized representatives under Section 104(e) of CERCLA. Further, Settling Defendants agree to pay the United States all costs it incurs including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. The United States shall not be held out as a party to any contract entered into by or on behalf of Settling Defendants in carrying out activities pursuant to this Consent Decree. Neither Settling Defendants nor any such contractor shall be considered an agent of the United States.

b. The United States shall give Settling Defendants notice of any claim for which the United States plans to seek indemnification pursuant to this Paragraph 60, and shall consult with Settling Defendants prior to settling such claim.

61. Settling Defendants covenant not to sue and agree not to assert any claims or causes of action against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person for performance

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1 of Work on or relating to the Site, including, but not limited to, claims on account of construction  
 2 delays. In addition, Settling Defendants shall indemnify and hold harmless the United States  
 3 with respect to any and all claims for damages or reimbursement arising from or on account of  
 4 any contract, agreement, or arrangement between any one or more of Settling Defendants and  
 5 any person for performance of Work on or relating to the Site, including, but not limited to,  
 6 claims on account of construction delays.

7 62. No later than 15 days before commencing any on-site Work, Settling Defendants (or,  
 8 as set forth below, their contractor(s)) shall secure, and shall maintain until the first anniversary  
 9 after issuance of EPA's Certification of Completion of the Remedial Action pursuant to  
 10 Paragraph 51.b of Section XIV (Certification of Completion), commercial general liability  
 11 insurance with limits of \$1 million dollars, for any one occurrence, and automobile liability  
 12 insurance with limits of \$1 million dollars, combined single limit, naming the United States as an  
 13 additional insured with respect to all liability arising out of the activities performed by or on  
 14 behalf of Settling Defendants pursuant to this Consent Decree. In addition, for the duration of  
 15 this Consent Decree, Settling Defendants shall satisfy, or shall ensure that their contractors or  
 16 subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's  
 17 compensation insurance for all persons performing the Work on behalf of Settling Defendants in  
 18 furtherance of this Consent Decree. Prior to commencement of the Work under this Consent  
 19 Decree, Settling Defendants shall provide to EPA certificates of such insurance and a copy of  
 20 each insurance policy. Settling Defendants shall resubmit such certificates and copies of policies  
 21 each year on the anniversary of the Effective Date. If Settling Defendants demonstrate by  
 22 evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent  
 23 to that described above, or insurance covering the same risks but in a lesser amount, then, with  
 24 respect to that contractor or subcontractor, Settling Defendants need provide only that portion of  
 25 the insurance described above that is not maintained by the contractor or subcontractor.

## 26 **XVIII. FORCE MAJEURE**

27 63. "Force majeure," for purposes of this Consent Decree, is defined as any event arising  
 28 from causes beyond the control of Settling Defendants, of any entity controlled by Settling

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1 Defendants, or of Settling Defendants' contractors that delays or prevents the performance of any  
 2 obligation under this Consent Decree despite Settling Defendants' best efforts to fulfill the  
 3 obligation. The requirement that Settling Defendants exercise "best efforts to fulfill the  
 4 obligation" includes using best efforts to anticipate any potential force majeure and best efforts  
 5 to address the effects of any potential force majeure (a) as it is occurring and (b) following the  
 6 potential force majeure such that the delay and any adverse effects of the delay are minimized to  
 7 the greatest extent possible. "Force majeure" does not include financial inability to complete the  
 8 Work or a failure to achieve the Performance Standards.

9 64. If any event occurs or has occurred that may delay the performance of any obligation  
 10 under this Consent Decree for which Settling Defendants intend or may intend to assert a claim  
 11 of force majeure, Settling Defendants shall notify EPA's Project Coordinator orally or, in his or  
 12 her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated  
 13 representatives are unavailable, the Director of the Superfund Division, EPA Region 9, within  
 14 three days of when Settling Defendants first knew that the event might cause a delay. Within ten  
 15 days thereafter, Settling Defendants shall provide in writing to EPA an explanation and  
 16 description of the reasons for the delay; the anticipated duration of the delay; all actions taken or  
 17 to be taken to prevent or minimize the delay; a schedule for implementation of any measures to  
 18 be taken to prevent or mitigate the delay or the effect of the delay; Settling Defendants' rationale  
 19 for attributing such delay to a force majeure; and a statement as to whether, in the opinion of  
 20 Settling Defendants, such event may cause or contribute to an endangerment to public health or  
 21 welfare, or the environment. Settling Defendants shall include with any notice all available  
 22 documentation supporting their claim that the delay was attributable to a force majeure. Settling  
 23 Defendants shall be deemed to know of any circumstance of which Settling Defendants, any  
 24 entity controlled by Settling Defendants, or Settling Defendants' contractors knew or should  
 25 have known. Failure to comply with the above requirements regarding an event shall preclude  
 26 Settling Defendants from asserting any claim of force majeure regarding that event, provided,  
 27 however, that if EPA, despite the late notice, is able to assess to its satisfaction whether the event  
 28 is a force majeure under Paragraph 63 and whether Settling Defendants have exercised their best

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1 efforts under Paragraph 63, EPA may, in its unreviewable discretion, excuse in writing Settling  
2 Defendants' failure to submit timely notices under this Paragraph.

3 65. If EPA agrees that the delay or anticipated delay is attributable to a force majeure, the  
4 time for performance of the obligations under this Consent Decree that are affected by the force  
5 majeure will be extended by EPA, for such time as is necessary to complete those obligations.  
6 An extension of the time for performance of the obligations affected by the force majeure shall  
7 not, of itself, extend the time for performance of any other obligation. If EPA does not agree that  
8 the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify  
9 Settling Defendants in writing of its decision. If EPA agrees that the delay is attributable to a  
10 force majeure, EPA will notify Settling Defendants in writing of the length of the extension, if  
11 any, for performance of the obligations affected by the force majeure.

12 66. If Settling Defendants elect to invoke the dispute resolution procedures set forth in  
13 Section XIX (Dispute Resolution), they shall do so no later than 15 days after receipt of EPA's  
14 notice. In any such proceeding, Settling Defendants shall have the burden of demonstrating by a  
15 preponderance of the evidence that the delay or anticipated delay has been or will be caused by a  
16 force majeure, that the duration of the delay or the extension sought was or will be warranted  
17 under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the  
18 delay, and that Settling Defendants complied with the requirements of Paragraphs 63 and 64. If  
19 Settling Defendants carry this burden, the delay at issue shall be deemed not to be a violation by  
20 Settling Defendants of the affected obligation of this Consent Decree identified to EPA and the  
21 Court.

## 22 **XIX. DISPUTE RESOLUTION**

23 67. Unless otherwise expressly provided for in this Consent Decree, the dispute  
24 resolution procedures of this Section shall be the exclusive mechanism to resolve disputes  
25 regarding this Consent Decree. However, the procedures set forth in this Section shall not apply  
26 to actions by the United States to enforce obligations of Settling Defendants that have not been  
27 disputed in accordance with this Section.  
28

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68. Any dispute regarding this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is modified by written agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

69. Statements of Position.

a. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within 30 days after the conclusion of the informal negotiation period, Settling Defendants invoke the formal dispute resolution procedures of this Section by serving on the United States a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by Settling Defendants. The Statement of Position shall specify Settling Defendants' position as to whether formal dispute resolution should proceed under Paragraph 70 (Record Review) or 71.

b. Within 60 days after receipt of Settling Defendants' Statement of Position, EPA will serve on Settling Defendants its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under Paragraph 70 (Record Review) or Paragraph 71. Within 15 days after receipt of EPA's Statement of Position, Settling Defendants may submit a Reply.

c. If there is disagreement between EPA and Settling Defendants as to whether dispute resolution should proceed under Paragraph 70 (Record Review) or 71, the parties to the dispute shall follow the procedures set forth in the paragraph determined by EPA to be applicable. However, if Settling Defendants ultimately appeal to the Court to resolve the dispute, the Court shall determine which paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 70 and 71.



1           70. Record Review. Formal dispute resolution for disputes pertaining to the selection or  
2 adequacy of any response action and all other disputes that are accorded review on the  
3 administrative record under applicable principles of administrative law shall be conducted  
4 pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the  
5 adequacy of any response action includes, without limitation, the adequacy or appropriateness of  
6 plans, procedures to implement plans, or any other items requiring approval by EPA under this  
7 Consent Decree, and the adequacy of the performance of response actions taken pursuant to this  
8 Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by  
9 Settling Defendants regarding the validity of the ROD Amendment's provisions.

10           a. An administrative record of the dispute shall be maintained by EPA and  
11 shall contain all statements of position, including supporting documentation, submitted pursuant  
12 to this Section. Where appropriate, EPA may allow submission of supplemental statements of  
13 position by the parties to the dispute.

14           b. The Director of the Superfund Division, EPA Region 9, will issue a final  
15 administrative decision resolving the dispute based on the administrative record described in  
16 Paragraph 70.a. This decision shall be binding upon Settling Defendants, subject only to the  
17 right to seek judicial review pursuant to Paragraphs 70.c and 70.d.

18           c. Any administrative decision made by EPA pursuant to Paragraph 70.b  
19 shall be reviewable by this Court, provided that a motion for judicial review of the decision is  
20 filed by Settling Defendants with the Court and served on all Parties within ten days after receipt  
21 of EPA's decision. The motion shall include a description of the matter in dispute, the efforts  
22 made by the parties to resolve it, the relief requested, and the schedule, if any, within which the  
23 dispute must be resolved to ensure orderly implementation of this Consent Decree. The United  
24 States may file a response to Settling Defendants' motion.

25           d. In proceedings on any dispute governed by this Paragraph, Settling  
26 Defendants shall have the burden of demonstrating that the decision of the Superfund Division  
27 Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of  
28 EPA's decision shall be on the administrative record compiled pursuant to Paragraph 70.a.

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1           71. Formal dispute resolution for disputes that neither pertain to the selection or adequacy  
2 of any response action nor are otherwise accorded review on the administrative record under  
3 applicable principles of administrative law, shall be governed by this Paragraph.

4           a.       Following receipt of Settling Defendants' Statement of Position submitted  
5 pursuant to Paragraph 69, the Director of the Superfund Division, EPA Region 9, will issue a  
6 final decision resolving the dispute. The Superfund Division Director's decision shall be binding  
7 on Settling Defendants unless, within 21 days after receipt of the decision, Settling Defendants  
8 file with the Court and serve on the parties a motion for judicial review of the decision setting  
9 forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and  
10 the schedule, if any, within which the dispute must be resolved to ensure orderly implementation  
11 of the Consent Decree. The United States may file a response to Settling Defendants' motion.

12           b.       Notwithstanding Paragraph L (CERCLA Section 113(j) Record Review of  
13 ROD Amendment and Work) of Section I (Background), judicial review of any dispute governed  
14 by this Paragraph shall be governed by applicable principles of law.

15           72. The invocation of formal dispute resolution procedures under this Section shall not  
16 extend, postpone, or affect in any way any obligation of Settling Defendants under this Consent  
17 Decree, not directly in dispute, unless EPA agrees or the Court determines otherwise. Stipulated  
18 penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed  
19 pending resolution of the dispute as provided in Paragraph 80. Notwithstanding the stay of  
20 payment, stipulated penalties shall accrue from the first day of noncompliance with any  
21 applicable provision of this Consent Decree. In the event that Settling Defendants do not prevail  
22 on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XX  
23 (Stipulated Penalties).

## 24                           **XX.    STIPULATED PENALTIES**

25           73. Settling Defendants shall be liable for stipulated penalties in the amounts set forth in  
26 Paragraphs 74 and 75 to the United States for failure to comply with the requirements of this  
27 Consent Decree specified below, unless excused under Section XVIII (Force Majeure).  
28 "Compliance" by Settling Defendants shall include completion of all payments and activities

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required under this Consent Decree, or any plan, report, or other deliverable approved under this Consent Decree, in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans, reports, or other deliverables approved under this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

74. Stipulated Penalty Amounts - Work (Including Payments and Excluding Plans, Reports, and Other Deliverables).

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 74.b:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th day
\$1,000	15th through 30th day
\$2,000	31st day and beyond

b. Compliance Milestones.

- (1) Initiation of construction of the Remedial Action;
- (2) Completion of construction of the Remedial Action;
- (3) Achievement of Performance Standards;
- (4) Timely payment of Past Response Costs;
- (5) Timely payment of Future Response Costs; and
- (6) Establish and maintain financial assurance in accordance with Paragraph 45.

75. Stipulated Penalty Amounts - Plans, Reports, and other Deliverables. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports or other plans or deliverables pursuant to the Consent Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$250	1st through 14th day
\$500	15th through 30th day
\$1,000	31st day and beyond

1           76. In the event that EPA assumes performance of a portion or all of the Work pursuant  
 2 to Paragraph 90 (Work Takeover), Settling Defendants shall be liable for a stipulated penalty in  
 3 the amount of \$1,000,000. Stipulated penalties under this Paragraph are in addition to the  
 4 remedies available under Paragraphs 49 (Funding for Work Takeover) and 90 (Work Takeover).

5           77. All penalties shall begin to accrue on the day after the complete performance is due or  
 6 the day a violation occurs and shall continue to accrue through the final day of the correction of  
 7 the noncompliance or completion of the activity. However, stipulated penalties shall not accrue:  
 8 (a) with respect to a deficient submission under Section XI (EPA Approval of Plans, Reports,  
 9 and Other Deliverables), during the period, if any, beginning on the 31st day after EPA's receipt  
 10 of such submission until the date that EPA notifies Settling Defendants of any deficiency; (b)  
 11 with respect to a decision by the Director of the Superfund Division, EPA Region 9, under  
 12 Paragraph 70.b or 71.a of Section XIX (Dispute Resolution), during the period, if any, beginning  
 13 on the 21st day after the date that Settling Defendants' reply to EPA's Statement of Position is  
 14 received until the date that the Director issues a final decision regarding such dispute; or (c) with  
 15 respect to judicial review by this Court of any dispute under Section XIX (Dispute Resolution),  
 16 during the period, if any, beginning on the 31st day after the Court's receipt of the final  
 17 submission regarding the dispute until the date that the Court issues a final decision regarding  
 18 such dispute. Nothing in this Consent Decree shall prevent the simultaneous accrual of separate  
 19 penalties for separate violations of this Consent Decree.

20           78. Following EPA's determination that Settling Defendants have failed to comply with a  
 21 requirement of this Consent Decree, EPA may give Settling Defendants written notification of  
 22 the same and describe the noncompliance. EPA may send Settling Defendants a written demand  
 23 for the payment of the penalties. However, penalties shall accrue as provided in the preceding  
 24 Paragraph regardless of whether EPA has notified Settling Defendants of a violation.

25           79. All penalties accruing under this Section shall be due and payable to the United States  
 26 within 30 days after Settling Defendants' receipt from EPA of a demand for payment of the  
 27 penalties, unless Settling Defendants invoke the Dispute Resolution procedures under Section  
 28 XIX (Dispute Resolution) within the 30-day period. All payments to the United States under this

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1 Section shall indicate that the payment is for stipulated penalties and shall be made in accordance  
2 with Paragraph 57.b (Instructions for Future Response Cost Payments).

3 80. Penalties shall continue to accrue as provided in Paragraph 77 during any dispute  
4 resolution period, but need not be paid until the following:

5 a. If the dispute is resolved by agreement of the Parties or by a decision of  
6 EPA that is not appealed to this Court, accrued penalties determined to be owed shall be paid to  
7 EPA within 15 days after the agreement or the receipt of EPA's decision or order;

8 b. If the dispute is appealed to this Court and the United States prevails in  
9 whole or in part, Settling Defendants shall pay all accrued penalties determined by the Court to  
10 be owed to EPA within 60 days after receipt of the Court's decision or order, except as provided  
11 in Paragraph 80.c;

12 c. If the District Court's decision is appealed by any Party, Settling  
13 Defendants shall pay all accrued penalties determined by the District Court to be owed to the  
14 United States into an interest-bearing escrow account, established at a duly chartered bank or  
15 trust company that is insured by the FDIC, within 60 days after receipt of the Court's decision or  
16 order. Penalties shall be paid into this account as they continue to accrue, at least every 60 days.  
17 Within 15 days after receipt of the final appellate court decision, the escrow agent shall pay the  
18 balance of the account to EPA or to Settling Defendants, to the extent that they prevail.

19 81. If Settling Defendants fail to pay stipulated penalties when due, Settling Defendants  
20 shall pay Interest on the unpaid stipulated penalties as follows: (a) if Settling Defendants have  
21 timely invoked dispute resolution such that the obligation to pay stipulated penalties has been  
22 stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated  
23 penalties are due pursuant to Paragraph 80 until the date of payment; and (b) if Settling  
24 Defendants fail to timely invoke dispute resolution, Interest shall accrue from the date of demand  
25 under Paragraph 79 until the date of payment. If Settling Defendants fail to pay stipulated  
26 penalties and Interest when due, the United States may institute proceedings to collect the  
27 penalties and Interest.  
28

82. The payment of penalties and Interest, if any, shall not alter in any way Settling Defendants' obligation to complete the performance of the Work required under this Consent Decree.

83. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Settling Defendants' violation of this Consent Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided in this Consent Decree, except in the case of a willful violation of this Consent Decree.

84. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Consent Decree.

## **XXI. COVENANTS BY PLAINTIFF**

85. Covenants for Settling Defendants by United States. In consideration of the actions that will be performed and the payments that will be made by Settling Defendants under this Consent Decree, and except as specifically provided in Paragraphs 86, 87 (United States' Pre- and Post-Certification Reservations), and 89 (General Reservations of Rights), the United States covenants not to sue or to take administrative action against Settling Defendants pursuant to Sections 106 and 107(a) of CERCLA relating to the Site. Except with respect to future liability, these covenants shall take effect upon the receipt by EPA of the payment required by Paragraph 55.a (Payments for Past Response Costs) and any Interest or stipulated penalties due thereon under Paragraph 59 (Interest) or Section XX (Stipulated Penalties). With respect to future liability, these covenants shall take effect upon Certification of Completion of Remedial Action by EPA pursuant to Paragraph 51.b of Section XIV (Certification of Completion). These covenants are conditioned upon the satisfactory performance by Settling Defendants of their

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obligations under this Consent Decree. These covenants extend only to Settling Defendants and do not extend to any other person.

86. United States' Pre-Certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, and/or to issue an administrative order, seeking to compel Settling Defendants to perform further response actions relating to the Site and/or to pay the United States for additional costs of response if, (a) prior to Certification of Completion of the Remedial Action, (1) conditions at the Site, previously unknown to EPA, are discovered, or (2) information, previously unknown to EPA, is received, in whole or in part, and (b) EPA determines that these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

87. United States' Post-Certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, and/or to issue an administrative order, seeking to compel Settling Defendants to perform further response actions relating to the Site and/or to pay the United States for additional costs of response if, (a) subsequent to Certification of Completion of the Remedial Action, (1) conditions at the Site, previously unknown to EPA, are discovered, or (2) information, previously unknown to EPA, is received, in whole or in part, and (b) EPA determines that these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action is not protective of human health or the environment.

88. For purposes of Paragraph 86 (United States' Pre-Certification Reservations), the information and the conditions known to EPA will include only that information and those conditions known to EPA as of the date the ROD Amendment was signed and set forth in the ROD Amendment for the Site and the administrative record supporting the ROD Amendment. For purposes of Paragraph 87 (United States' Post-Certification Reservations), the information and the conditions known to EPA shall include only that information and those conditions known

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1 to EPA as of the date of Certification of Completion of the Remedial Action and set forth in the  
 2 ROD Amendment, the administrative record supporting the ROD Amendment, the post-ROD  
 3 Amendment administrative record, or in any information received by EPA pursuant to the  
 4 requirements of this Consent Decree prior to Certification of Completion of the Remedial  
 5 Action.

6 89. General Reservations of Rights. The United States reserves, and this Consent Decree  
 7 is without prejudice to, all rights against Settling Defendants with respect to all matters not  
 8 expressly included within Plaintiff's covenants. Notwithstanding any other provision of this  
 9 Consent Decree, the United States reserves all rights against Settling Defendants with respect to:

10 a. liability for failure by Settling Defendants to meet a requirement of this  
 11 Consent Decree;

12 b. liability arising from the past, present, or future disposal, release, or threat  
 13 of release of Waste Material outside of the Site;

14 c. liability based on the ownership of the Site by Settling Defendants when  
 15 such ownership commences after signature of this Consent Decree by Settling Defendants;

16 d. liability based on the operation of the Site by Settling Defendants when  
 17 such operation commences after signature of this Consent Decree by Settling Defendants and  
 18 does not arise solely from Settling Defendants' performance of the Work;

19 e. liability based on Settling Defendants' transportation, treatment, storage,  
 20 or disposal, or arrangement for transportation, treatment, storage, or disposal of Waste Material  
 21 at or in connection with the Site, other than as provided in the ROD Amendment, the Work, or  
 22 otherwise ordered by EPA, after signature of this Consent Decree by Settling Defendants;

23 f. liability for damages for injury to, destruction of, or loss of natural  
 24 resources, and for the costs of any natural resource damage assessments;

25 g. criminal liability;

26 h. liability for violations of federal or state law that occur during or after  
 27 implementation of the Work; and  
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i. liability, prior to Certification of Completion of the Remedial Action, for additional response actions that EPA determines are necessary to achieve and maintain Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD Amendment, but that cannot be required pursuant to Paragraph 15 (Modification of SOW or Related Work Plans);

90. Work Takeover.

a. In the event EPA determines that Settling Defendants have (1) ceased implementation of any portion of the Work, or (2) are seriously or repeatedly deficient or late in their performance of the Work, or (3) are implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice (“Work Takeover Notice”) to Settling Defendants. Any Work Takeover Notice issued by EPA will specify the grounds upon which such notice was issued and will provide Settling Defendants a period of fourteen days within which to remedy the circumstances giving rise to EPA’s issuance of such notice.

b. If, after expiration of the fourteen-day notice period specified in Paragraph 90.a, Settling Defendants have not remedied to EPA’s satisfaction the circumstances giving rise to EPA’s issuance of the relevant Work Takeover Notice, EPA may at any time thereafter assume the performance of all or any portion(s) of the Work as EPA deems necessary (“Work Takeover”). EPA will notify Settling Defendants in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this Paragraph 90.b. Funding of Work Takeover costs is addressed under Paragraph 49.

c. Settling Defendants may invoke the procedures set forth in Paragraph 70 (Record Review), to dispute EPA’s implementation of a Work Takeover under Paragraph 90.b. However, notwithstanding Settling Defendants’ invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover under Paragraph 90.b until the earlier of (1) the date that Settling Defendants remedy, to EPA’s satisfaction, the circumstances giving rise to EPA’s issuance of the relevant Work Takeover Notice, or (2) the date that a final decision is rendered in

1 accordance with Paragraph 70 (Record Review) requiring EPA to terminate such Work  
2 Takeover.

3 91. Notwithstanding any other provision of this Consent Decree, the United States retains  
4 all authority and reserves all rights to take any and all response actions authorized by law.

## 5 **XXII. COVENANTS BY SETTLING DEFENDANTS**

6 92. Covenants by Settling Defendants. Subject to the reservations in Paragraph 94,  
7 Settling Defendants covenant not to sue and agree not to assert any claims or causes of action  
8 against the United States with respect to the Site and this Consent Decree, including, but not  
9 limited to:

10 a. any direct or indirect claim for reimbursement from the EPA Hazardous  
11 Substance Superfund through CERCLA Sections 106(b)(2), 107, 111, 112 or 113, or any other  
12 provision of law;

13 b. any claims under CERCLA Sections 107 or 113, RCRA Section 7002(a),  
14 42 U.S.C. § 6972(a), or state law regarding the Site and this Consent Decree; or

15 c. any claims arising out of response actions at or in connection with the Site,  
16 including any claim under the United States Constitution, the State Constitution, the Tucker Act,  
17 28 U.S.C. §1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law.

18 93. Except as provided in Paragraph 102 (Res Judicata and Other Defenses), the  
19 covenants in this Section shall not apply if the United States brings a cause of action or issues an  
20 order pursuant to any of the reservations in Section XXI (Covenants by Plaintiff), other than in  
21 Paragraphs 89.a (claims for failure to meet a requirement of the Consent Decree), 89.g (criminal  
22 liability), and 89.h (violations of federal/state law during or after implementation of the Work),  
23 but only to the extent that Settling Defendants' claims arise from the same response action,  
24 response costs, or damages that the United States is seeking pursuant to the applicable  
25 reservation.

26 94. Settling Defendants reserve, and this Consent Decree is without prejudice to, claims  
27 against the United States, subject to the provisions of Chapter 171 of Title 28 of the United  
28 States Code, and brought pursuant to any statute other than CERCLA or RCRA and for which

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the waiver of sovereign immunity is found in a statute other than CERCLA or RCRA, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of Settling Defendants' plans, reports, other deliverables or activities.

95. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

96. Claims Against De Micromis Parties. Settling Defendants agree not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) and 113 of CERCLA) that they may have for all matters relating to the Site against any person where the person's liability to Settling Defendants with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if all or part of the disposal, treatment, or transport occurred before April 1, 2001, and the total amount of material containing hazardous substances contributed by such person to the Site was less than 110 gallons of liquid materials or 200 pounds of solid materials.

97. The waiver in Paragraph 96 (Claims Against De Micromis Parties) shall not apply with respect to any defense, claim, or cause of action that a Settling Defendant may have against any person meeting the criteria in Paragraph 96 if such person asserts a claim or cause of action relating to the Site against such Settling Defendant. This waiver also shall not apply to any claim or cause of action against any person meeting the criteria in Paragraph 96 if EPA determines:

a. that such person has failed to comply with any EPA requests for information or administrative subpoenas issued pursuant to Section 104(e) or 122(e) of

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1 CERCLA, 42 U.S.C. § 9604(e) or 9622(e), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has  
 2 impeded or is impeding, through action or inaction, the performance of a response action or  
 3 natural resource restoration with respect to the Site, or has been convicted of a criminal violation  
 4 for the conduct to which this waiver would apply and that conviction has not been vitiated on  
 5 appeal or otherwise; or

6 b. that the materials containing hazardous substances contributed to the Site  
 7 by such person have contributed significantly, or could contribute significantly, either  
 8 individually or in the aggregate, to the cost of response action or natural resource restoration at  
 9 the Site.

### 10 **XXIII. EFFECT OF SETTLEMENT; CONTRIBUTION**

11 98. Except as provided in Paragraph 96 (Claims Against De Micromis Parties), nothing in  
 12 this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any  
 13 person not a Party to this Consent Decree. Except as provided in Paragraph 96 (Claims Against  
 14 De Micromis Parties), each of the Parties expressly reserves any and all rights (including, but not  
 15 limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613), defenses, claims, demands,  
 16 and causes of action that each Party may have with respect to any matter, transaction, or  
 17 occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this  
 18 Consent Decree diminishes the right of the United States, pursuant to Section 113(f)(2) and (3)  
 19 of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional  
 20 response costs or response action and to enter into settlements that give rise to contribution  
 21 protection pursuant to Section 113(f)(2).

22 99. The Parties agree, and by entering this Consent Decree this Court finds, that this  
 23 Consent Decree constitutes a judicially approved settlement for purposes of Section 113(f)(2) of  
 24 CERCLA, 42 U.S.C. § 9613(f)(2), and that each Settling Defendant is entitled, as of the  
 25 Effective Date, to protection from contribution actions or claims as provided by  
 26 Section 113(f)(2) of CERCLA, or as may be otherwise provided by law, for “matters addressed”  
 27 in this Consent Decree. The “matters addressed” in this Consent Decree are all response actions  
 28 taken or to be taken and all response costs incurred or to be incurred, at or in connection with the

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1 Site, by the United States or any other person, except for the State; provided, however, that if the  
 2 United States exercises rights under the reservations in Section XXI (Covenants by Plaintiff),  
 3 other than in Paragraphs 89.a (claims for failure to meet a requirement of the Consent Decree),  
 4 89.g (criminal liability), or 89.h (violations of federal/state law during or after implementation of  
 5 the Work), the “matters addressed” in this Consent Decree will no longer include those response  
 6 costs or response actions that are within the scope of the exercised reservation.

7 100. Each Settling Defendant shall, with respect to any suit or claim brought by it for  
 8 matters related to this Consent Decree, notify the United States in writing no later than 60 days  
 9 prior to the initiation of such suit or claim.

10 101. Each Settling Defendant shall, with respect to any suit or claim brought against it  
 11 for matters related to this Consent Decree, notify in writing the United States within ten days  
 12 after service of the complaint on such Settling Defendant. In addition, each Settling Defendant  
 13 shall notify the United States within ten days after service or receipt of any Motion for Summary  
 14 Judgment and within ten days after receipt of any order from a court setting a case for trial.

15 102. Res Judicata and Other Defenses. In any subsequent administrative or judicial  
 16 proceeding initiated by the United States for injunctive relief, recovery of response costs, or  
 17 other appropriate relief relating to the Site, Settling Defendants shall not assert, and may not  
 18 maintain, any defense or claim based upon the principles of waiver, res judicata, collateral  
 19 estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the  
 20 claims raised by the United States in the subsequent proceeding were or should have been  
 21 brought in the instant case; provided, however, that nothing in this Paragraph affects the  
 22 enforceability of the covenants not to sue set forth in Section XXI (Covenants by Plaintiff).

#### 23 **XXIV. ACCESS TO INFORMATION**

24 103. Settling Defendants shall provide to EPA, upon request, copies of all records,  
 25 reports, documents, and other information (including records, reports, documents, and other  
 26 information in electronic form) (hereinafter referred to as “Records”) within their possession or  
 27 control or that of their contractors or agents relating to activities at the Site or to the  
 28 implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of

*Consent Decree*

1 custody records, manifests, trucking logs, receipts, reports, sample traffic routing,  
 2 correspondence, or other documents or information regarding the Work. Settling Defendants  
 3 shall also make available to EPA, for purposes of investigation, information gathering, or  
 4 testimony, their employees, agents, or representatives with knowledge of relevant facts  
 5 concerning the performance of the Work.

6 104. Business Confidential and Privileged Documents.

7 a. Settling Defendants may assert business confidentiality claims covering  
 8 part or all of the Records submitted to Plaintiff under this Consent Decree to the extent permitted  
 9 by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R.  
 10 § 2.203(b). Records determined to be confidential by EPA will be afforded the protection  
 11 specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records  
 12 when they are submitted to EPA, or if EPA has notified Settling Defendants that the Records are  
 13 not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2,  
 14 Subpart B, the public may be given access to such Records without further notice to Settling  
 15 Defendants.

16 b. Settling Defendants may assert that certain Records are privileged under  
 17 the attorney-client privilege or any other privilege recognized by federal law. If Settling  
 18 Defendants assert such a privilege in lieu of providing Records, they shall provide Plaintiff with  
 19 the following: (1) the title of the Record; (2) the date of the Record; (3) the name, title,  
 20 affiliation (e.g., company or firm), and address of the author of the Record; (4) the name and title  
 21 of each addressee and recipient; (5) a description of the contents of the Record; and (6) the  
 22 privilege asserted by Settling Defendants. If a claim of privilege applies only to a portion of a  
 23 Record, the Record shall be provided to the United States in redacted form to mask the  
 24 privileged portion only. Settling Defendants shall retain all Records that they claim to be  
 25 privileged until the United States has had a reasonable opportunity to dispute the privilege claim  
 26 and any such dispute has been resolved in the Settling Defendants' favor.

27 //

28 //

*Consent Decree*

1 c. No Records created or generated pursuant to the requirements of this  
 2 Consent Decree shall be withheld from the United States on the grounds that they are privileged  
 3 or confidential.

4 105. No claim of confidentiality or privilege shall be made with respect to any data,  
 5 including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific,  
 6 chemical, or engineering data, or any other documents or information evidencing conditions at or  
 7 around the Site.

#### 8 **XXV. RETENTION OF RECORDS**

9 106. Until ten years after Settling Defendants' receipt of EPA's notification pursuant to  
 10 Paragraph 52.b (Completion of the Work), each Settling Defendant shall preserve and retain all  
 11 non-identical copies of Records (including Records in electronic form) now in its possession or  
 12 control or that come into its possession or control that relate in any manner to its liability under  
 13 CERCLA with respect to the Site, provided, however, that Settling Defendants who are  
 14 potentially liable as owners or operators of the Site must retain, in addition, all Records that  
 15 relate to the liability of any other person under CERCLA with respect to the Site. Each Settling  
 16 Defendant must also retain, and instruct its contractors and agents to preserve, for the same  
 17 period of time specified above all non-identical copies of the last draft or final version of any  
 18 Records (including Records in electronic form) now in its possession or control or that come into  
 19 its possession or control that relate in any manner to the performance of the Work, provided,  
 20 however, that each Settling Defendant (and its contractors and agents) must retain, in addition,  
 21 copies of all data generated during the performance of the Work and not contained in the  
 22 aforementioned Records required to be retained. Each of the above record retention  
 23 requirements shall apply regardless of any corporate retention policy to the contrary.

24 107. At the conclusion of this record retention period, Settling Defendants shall notify  
 25 the United States at least 90 days prior to the destruction of any such Records, and, upon request  
 26 by the United States, Settling Defendants shall deliver any such Records to EPA. Settling  
 27 Defendants may assert that certain Records are privileged under the attorney-client privilege or  
 28 any other privilege recognized by federal law. If Settling Defendants assert such a privilege,

*Consent Decree*



they shall provide Plaintiff with the following: (a) the title of the Record; (b) the date of the Record; (c) the name, title, affiliation (e.g., company or firm), and address of the author of the Record; (d) the name and title of each addressee and recipient; (e) a description of the subject of the Record; and (f) the privilege asserted by Settling Defendants. If a claim of privilege applies only to a portion of a Record, the Record shall be provided to the United States in redacted form to mask the privileged portion only. Settling Defendants shall retain all Records that they claim to be privileged until the United States has had a reasonable opportunity to dispute the privilege claim and any such dispute has been resolved in the Settling Defendants' favor. However, no Records created or generated pursuant to the requirements of this Consent Decree shall be withheld on the grounds that they are privileged or confidential.

108. Each Settling Defendant certifies individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since the earlier of notification of potential liability by the United States or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information regarding the Site pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

## **XXVI. NOTICES AND SUBMISSIONS**

109. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified in this Section shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, and Settling Defendants, respectively. Notices required to be sent to EPA, and not to the United States, under the terms of this Consent Decree should not be sent to the U.S. Department of Justice.

*Consent Decree*



As to the United States:

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
P.O. Box 7611  
Washington, D.C. 20044-7611  
Re: DJ # 90-11-2-849/1

As to EPA:

Director, Superfund Division  
U.S. Environmental Protection Agency, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

and:

Raymond Chavira  
EPA Project Coordinator  
U.S. Environmental Protection Agency, Region 9  
75 Hawthorne Street

As to the Regional Financial  
Management Officer:

David Wood  
Regional Financial Management Officer  
U.S. Environmental Protection Agency, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

As to Settling Defendants:

President  
CTS Printex, Inc.  
905 West Boulevard North  
Elkhart, Indiana 46514-1899

*Consent Decree*

1 and: ADN Corporation  
2 c/o Nearon Enterprises  
3 500 La Gonda Way, Suite 210  
4 Danville, California 94526  
5 Attention: CEO and CFO  
6

7 and: Elie Haddad  
8 Settling Defendants' Project Coordinator  
9 Haley & Aldrich  
10 2107 N. 1st Street, Suite 420  
11 San Jose, CA 95131-2028  
12

13 and: General Counsel  
14 CTS Corporation  
15 905 West Boulevard North  
16 Elkhart, IN 46514  
17

## 18 **XXVII. RETENTION OF JURISDICTION**

19 110. This Court retains jurisdiction over both the subject matter of this Consent Decree  
20 and Settling Defendants for the duration of the performance of the terms and provisions of this  
21 Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time  
22 for such further order, direction, and relief as may be necessary or appropriate for the  
23 construction or modification of this Consent Decree, or to effectuate or enforce compliance with  
its terms, or to resolve disputes in accordance with Section XIX (Dispute Resolution).

## 24 **XXVIII. APPENDICES**

25 111. The following appendices are attached to and incorporated into this Consent  
26 Decree:

27 "Appendix A" is the ROD Amendment.

28 "Appendix B" is the SOW.

*Consent Decree*

1 “Appendix C” is the description and/or map of the Site.

2 “Appendix D” is the complete list of Settling Defendants.

3 “Appendix E” is the performance guarantee.

#### 4 **XXIX. COMMUNITY INVOLVEMENT**

5 112. If requested by EPA, Settling Defendants shall assist EPA with community  
6 involvement activities pursuant to the community involvement plan to be developed by EPA.  
7 Settling Defendants shall cooperate with EPA in providing information regarding the Work to  
8 the public. If requested by EPA, Settling Defendants shall participate in the preparation of  
9 information for dissemination to the public at public meetings that may be held or sponsored by  
10 EPA to explain activities at or relating to the Site. If requested by EPA, Settling Defendant’s  
11 Supervising Contractor shall attend and participate in such public meetings. Costs incurred by  
12 the United States under this Section, including the costs of any technical assistance grant under  
13 Section 117(e) of CERCLA, 42 U.S.C. § 9617(e), shall be considered Future Response Costs  
14 that Settling Defendants shall pay pursuant to Section XVI (Payments for Response Costs).

#### 15 **XXX. MODIFICATION**

16 113. Except as provided in Paragraph 15 (Modification of SOW or Related Work  
17 Plans), material modifications to this Consent Decree, including the SOW, shall be in writing,  
18 signed by the United States and Settling Defendants, and shall be effective upon approval by the  
19 Court. Except as provided in Paragraph 15, non-material modifications to this Consent Decree,  
20 including the SOW, shall be in writing and shall be effective when signed by duly authorized  
21 representatives of the United States and Settling Defendants. A modification to the SOW shall  
22 be considered material if it fundamentally alters the basic features of the selected remedy within  
23 the meaning of 40 C.F.R. § 300.435(c)(2)(ii).

24 114. Nothing in this Consent Decree shall be deemed to alter the Court’s power to  
25 enforce, supervise, or approve modifications to this Consent Decree.

#### 26 **XXXI. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT**

27 115. This Consent Decree shall be lodged with the Court for a period of not less than  
28 30 days for public notice and comment in accordance with Section 122(d)(2) of CERCLA,

*Consent Decree*

42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations that indicate that the Consent Decree is inappropriate, improper, or inadequate. Settling Defendants consent to the entry of this Consent Decree without further notice.

116. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

### **XXXII. SIGNATORIES/SERVICE**

117. Each undersigned representative of a Settling Defendant to this Consent Decree and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

118. Each Settling Defendant agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified Settling Defendants in writing that it no longer supports entry of the Consent Decree.

119. Each Settling Defendant shall identify, on the attached signature page, the name, address, and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with respect to all matters arising under or relating to this Consent Decree. Settling Defendants agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons. Settling Defendants need not file an answer to the complaint in this action unless or until the Court expressly declines to enter this Consent Decree.

### **XXXIII. FINAL JUDGMENT**

120. This Consent Decree and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties regarding the settlement embodied in the Consent Decree. The Parties acknowledge that there are no representations, agreements, or

*Consent Decree*

1 understandings relating to the settlement other than those expressly contained in this Consent  
2 Decree.

3 121. Upon entry of this Consent Decree by the Court, this Consent Decree shall  
4 constitute a final judgment between and among the United States and Settling Defendants. The  
5 Court enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

6  
7 SO ORDERED

8  
9  
10 Dated: 04/14/2014

  
\_\_\_\_\_  
United States District Judge

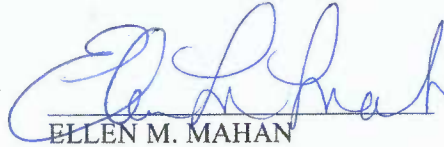
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*Consent Decree*

Signature Page for Consent Decree regarding the CTS Printex Superfund Site

FOR THE UNITED STATES OF AMERICA:

1/15/14

Date



ELLEN M. MAHAN

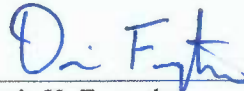
Deputy Chief

Environmental Enforcement Section

Environment and Natural Resources Division

U.S. Department of Justice

Washington, D.C. 20530



Davis H. Forsythe

Environmental Enforcement Section

Environment and Natural Resources Division

U.S. Department of Justice


999 18<sup>th</sup> Street

South Terrace – Suite 370

Denver, CO 80202

Consent Decree

1 Signature Page for Consent Decree regarding the CTS Printex Superfund Site

2  
3  
4  12/16/13

5 Enrique Manzanilla  
6 Director, Superfund Division, Region 9  
7 U.S. Environmental Protection Agency  
8 75 Hawthorne Street  
9 San Francisco, CA 94105

10  11/25/13

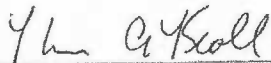
11 Taly Jolish  
12 Assistant Regional Counsel  
13 U.S. Environmental Protection Agency  
14 Region 9  
15 75 Hawthorne Street  
16 San Francisco, CA 94105

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Consent Decree

1 Signature Page for Consent Decree regarding the CTS Printex Superfund Site

2  
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4 FOR CTS Printex

5  
6 November 22, 2013  
Date



Name (print): Thomas A. Kroll

Title: Treasurer

Address: 905 West Blvd. North  
Elkhart, IN 46514

7  
8  
9 Agent Authorized to Accept Service  
on Behalf of Above-signed Party

10 Name (print): Elizabeth B. Ahlemann  
Title: Assistant General Counsel  
Address: 905 West Blvd. North,  
11 Elkhart, IN 46514  
Phone: (574) 523-3809  
12 email: elizabeth.ahlemann@ctscorp.  
13 com  
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Consent Decree

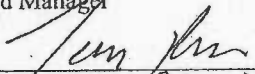


1 Signature Page for Consent Decree regarding the CTS Printex Superfund Site

2  
3 Date: Nov 26, 2013

By: ADN Corporation, a California corporation

4 By: Nearon Enterprises, a California corporation  
5 Its: Designated Manager

6 By:   
7 Name: TOM PERINO  
8 Its: EXECUTIVE V.P.

9 Agent Authorized to Accept Service  
10 on Behalf of Above-signed Party

11 Name: GKL Corporate/Search, Inc.  
12 Title:  
13 Address: One Capitol Mall, Suite 660  
14 Sacramento, CA 95814  
15 Phone: (800) 446-5455  
16 Email: info@gklcorpsearch.com  
17  
18  
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Consent Decree

## **Appendix A**

# **RECORD OF DECISION AMENDMENT**

## **for Groundwater and Vapor Intrusion**

### **CTS Printex, Inc. Superfund Site**

Mountain View, California

U.S. Environmental Protection Agency Region 9

San Francisco, California

September 2011

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## **PART 1 – DECLARATION**

### **1 Site Name and Location**

This document amends the June 28, 1991 Record of Decision (1991 ROD), and addresses groundwater contamination and the vapor intrusion pathway at the CTS Printex Superfund Site (Site) located in Mountain View, California. The U.S. Environmental Protection Agency (EPA) Site Identification Number for the Site is CAD009212838.

### **2 Statement of Basis and Purpose**

This amendment to the 1991 ROD (ROD Amendment) presents the selected remedy for groundwater contamination and the vapor intrusion pathway for the Site, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§9601-9675 (CERCLA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 (NCP). The decisions set forth in this ROD Amendment are based on information contained in the Administrative Record for the Site.

EPA is the lead agency for this Site, having assumed that role from the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board) in 2006. The Water Board is currently the support agency. The State of California, acting through the Regional Water Board, concurs with the selected groundwater remedy and vapor intrusion remedy.

### **3 Assessment of the Site**

The original response action for groundwater – an extraction system with discharge to sewer, selected in the 1991 ROD – successfully removed much of the contaminant mass at the Site, and was discontinued in 1996. An area with residual contaminant mass has, however, persisted in groundwater at the Site, and contaminant concentrations in groundwater remain above cleanup standards. EPA has also determined that there are potential health risks associated with long-term exposure to trichloroethene (TCE) and other Site chemicals of concern through the vapor intrusion pathway in existing and future buildings overlying that shallow groundwater contamination.

The response actions selected in this ROD Amendment are necessary to protect public health from actual or threatened releases of hazardous substances into the environment. Therefore, an amendment to the 1991 ROD is necessary.

### **4 Description of the Selected Remedy**

The main components of the original 1991 groundwater remedy included:

- Groundwater pumping from extraction wells.
- Disposal of the contaminated groundwater to the sanitary sewer for treatment at the City of Mountain View's wastewater treatment plant.
- Groundwater monitoring.

The revised groundwater remedy replaces the original remedy (groundwater extraction and discharge) with:

- Enhanced anaerobic bioremediation for the area with residual contaminant mass near Monitoring Well 17W;
- Monitored Natural Attenuation (MNA);
- Institutional controls (ICs) to prevent the use of the contaminated groundwater at the Site and any interference with the remedial systems; and
- Monitoring.

In the event that MNA does not prove effective at reducing groundwater contamination to the cleanup levels, the selected remedy includes a contingency. If necessary, the contingency remedy – EAB treatment in areas of the Site north of Plymouth Street – will be invoked through an Explanation of Significant Differences decision document.

There are no principal threat wastes, i.e. highly toxic source materials (as defined in the NCP §300.430(a)(1)(iii)(A)), remaining at the Site. This action will address the dissolved groundwater plume which would only present a low level risk in the event of exposure.

The vapor intrusion remedy selected in this ROD Amendment addresses the potential long-term exposure risks from TCE and other chemicals of concern through the vapor intrusion pathway at the Site, which was not addressed in the 1991 ROD. At that time, less was understood about vapor intrusion, or the migration of volatile chemicals from the subsurface into overlying buildings. EPA's objective for the vapor intrusion remedy is to protect the health of current and future occupants, including workers and residents, of buildings overlying the Site's shallow subsurface contamination.

EPA's selected remedy to address the vapor intrusion pathway and ensure protection of the human health of building occupants at the Site consists of the following:

- For Existing Buildings
  - South of Plymouth Street
    - Passive Sub-slab Ventilation with Vapor Barrier, and ICs (already implemented) and Monitoring. The ICs will consist of:
      - Environmental Restriction Covenant (already recorded).
  - North of Plymouth Street Area
    - No engineering control; ICs only. The ICs consist of:
      - Planning, permitting, and building requirements to install appropriate engineering controls in future construction
- For New Construction/Future Buildings
  - Vapor Barrier with Passive Sub-slab/Sub-membrane Ventilation, Monitoring, ICs (with ability to convert to Active Ventilation) and Monitoring. The ICs consist of:
    - Permitting and building requirements to install appropriate engineering controls.
    - Environmental Restriction Covenant

*ROD Amendment – CTS Printex Superfund Site – September 2011*



- Where lines of evidence collected at the time of new construction indicate that there is no potential for vapor intrusion resulting in indoor air concentrations above indoor air cleanup levels;
  - Upon confirmation and with EPA approval, no further action required.

## **5 Statutory Determinations**

The selected remedies for groundwater and vapor intrusion, and if necessary, the contingency remedy, are protective of human health and the environment, comply with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, are cost-effective, and utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. For the groundwater remedy, the application of enhanced anaerobic bioremediation to the area with residual contaminant mass satisfies the statutory preference for treatment as a principal element of the remedy which permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances. The vapor intrusion remedy does not involve active treatment and therefore does not satisfy the statutory preference for treatment as a principal element of the remedy. Unlike typical remedies to address contamination, remedies for vapor intrusion are designed to prevent exposure to the contaminants, but not necessarily designed to reduce toxicity, mobility, and volume through treatment.

The remedies selected in this ROD Amendment will result in attainment of remedial action objectives and cleanup levels such that the affected properties will be available for unlimited use and unrestricted exposure. However, because the remedies will take more than five years to attain those goals, a policy review will continue to be conducted a minimum of every five years to ensure that the Site groundwater and vapor intrusion remedies are, or will be, protective of human health and the environment.

## **6 ROD Data Certification Checklist**

The following information is included in Part 2 (Decision Summary) of this ROD Amendment. Additional information can be found in the Administrative Record file for the Site.

- Chemicals of concern and their respective concentrations in groundwater (Table 1 in Section 8) and in indoor air and sub-slab soil gas (Section 7).
- Baseline risk represented by the chemicals of concern (Section 7).
- Cleanup levels established for chemicals of concern and the basis for these levels (Section 8).
- Source materials were addressed in 1991 ROD, thus no principal threat waste remains at the Site (Section 11).
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and this ROD Amendment (Section 6).
- Potential land and groundwater use that will be available at the Site as a result of the Selected Remedy (Section 12).

- Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected (Section 9.1 and Section 9.2).
- Key factors that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) (Section 12.1, Section 12.2, and Section 14).

## **7 Authorizing Signature**

This ROD Amendment documents the selected remedies for groundwater and the vapor intrusion pathway at the CTS Printex Site. EPA selected these remedies with the concurrence of the State of California, acting through the San Francisco Bay Regional Water Quality Control Board. The Director of the Superfund Division has delegated to the undersigned the authority to approve and sign this ROD Amendment.

 9/30/11  
Date

Kathleen Salyer  
Assistant Director

California Site Cleanup Branch, Superfund Division  
U.S. Environmental Protection Agency Region 9

## **PART 2 – DECISION SUMMARY**

This Decision Summary provides a description of the site-specific factors, supplemental investigations, remedial alternatives evaluated, and analysis of those options that led to the selection of the groundwater remedy and the vapor intrusion remedy for the CTS Printex Superfund Site (referred to as the “Site”). This Decision Summary also summarizes the groundwater and vapor intrusion remedies that EPA has selected and explains how each remedy fulfills the statutory and regulatory requirements.

### **1 Site Name, Location, and Brief Description**

This document is an amendment to the 1991 Record of Decision (1991 ROD) for the Site, located in Mountain View, California (**Figure 1. Site Location Map**). The EPA Site Identification Number is CAD009212838.

The former CTS Printex facility was located on property bounded by Colony Street on the South, Plymouth Street on the north, Sierra Vista Avenue on the west, and U.S. Highway 101 (Bayshore Freeway) on the east. The Site boundaries are defined by the extent of the underlying groundwater contamination. The land use includes commercial/light industrial and residential.

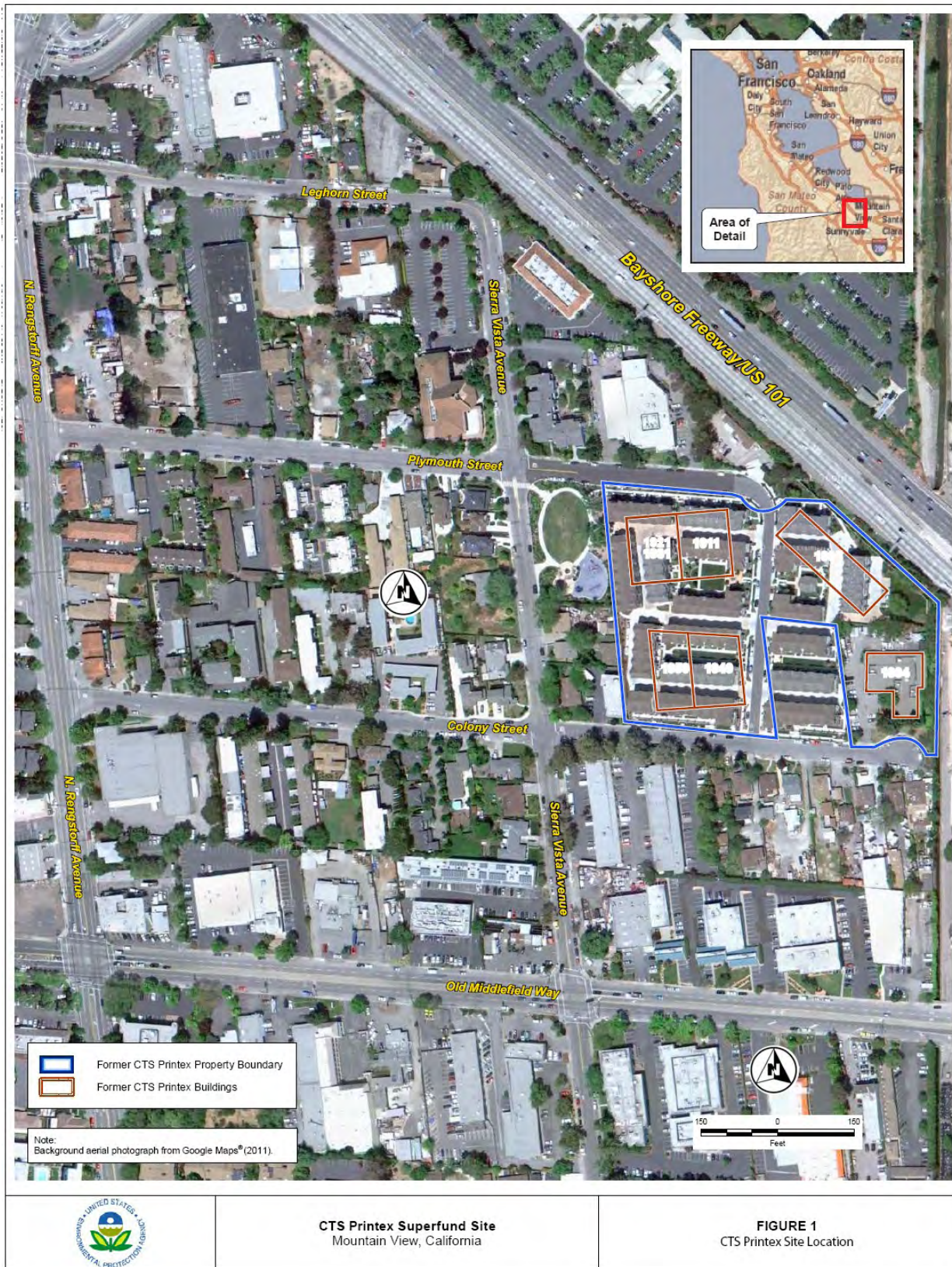
EPA is the lead agency for this Site, having assumed that role from the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) in 2006. The Water Board is currently the State support agency.

### **2 Site History and Enforcement Activities**

CTS Printex, and its corporate predecessor, operated a printed circuit board manufacturing facility on a portion of the Site between 1970 and 1985. Those operations involved use of various VOCs, including trichloroethene (TCE), which impacted soils and groundwater on and off the property. In 1985, prior to shutting down operations at the facility, CTS Printex initiated a site investigation, in cooperation with the Water Board and other state and local agencies. When the investigation revealed soil and groundwater contamination, the Water Board pursued enforcement actions, requiring the potentially responsible parties to address the contamination.

Over the next several years, the Water Board issued a number of Cleanup and Abatement Orders (CAOs) regarding the Site, culminating in 1990 with CAO 90-14, which required continued operation and maintenance of the already-operational groundwater extraction system. EPA placed the Site on the National Priorities List (NPL) in 1990, and then issued the 1991 ROD selecting the groundwater remedy, which included continued operation of groundwater extraction and sewer discharge until achievement of cleanup levels. Pursuant to a cooperative agreement with EPA, the Water Board continued the role of lead agency for enforcement of Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§9601-9675 (CERCLA).





After nearly a decade of operation, the groundwater extraction system was shut down in 1996, based on the Water Board's determination that the system was no longer effective. Between 1987 and 1996, the system successfully removed approximately 100 pounds of TCE from 106 million gallons of groundwater and reduced the lateral extent of the TCE groundwater plume in the two shallowest groundwater aquifer zones, referred to as the "A and B zones." By 1996, however, the rate of TCE removal had dropped significantly. No CERCLA decision document was prepared at that time.

The second five-year review report for the Site was issued in 2005 and recommended that a ROD Amendment be prepared to include institutional controls prohibiting the use of contaminated shallow groundwater and to evaluate the potential vapor intrusion pathway. In 2006, EPA assumed the role of lead regulatory, and the Water Board is now the support agency. Annual groundwater monitoring continues at the Site.

### **3 Community Participation**

The Supplemental Remedial Investigation and Feasibility Study reports for groundwater and vapor intrusion were made available to the public on May 29, 2011. On June 2, 2011, EPA issued the Proposed Plan and announced the availability of the Supplemental Remedial Investigation and Feasibility reports and Administrative Record file for review at the information repositories at the Mountain View Public Library and the EPA Superfund Records Center in San Francisco. Electronic copies of the documents were also made available on EPA Region 9's website: [www.epa.gov/region9/ctsprintex](http://www.epa.gov/region9/ctsprintex). Copies of the Proposed Plan were e-mailed and delivered door-to-door to residents, property owners, and other interested parties. Also, a notice was published in the Mountain View Voice newspaper on June 3, 2011; the notice summarized the Proposed Plan and announced the public meeting and public comment period.

A 30-day public comment period began on June 3, 2011. In response to a request for additional time, the public comment period was extended to July 8, 2011. EPA held a public meeting on June 15, 2011, at the Mountain View City Hall, and approximately 12 people attended.

Comments made at the June 15th public meeting and written comments received during the public comment period are included in the Administrative Record file. EPA's summary of responses to those comments is included in Part 3 (Responsiveness Summary) of this ROD Amendment.

EPA has complied with the community involvement requirements set forth in CERCLA Section 117 and NCP Section 300.435(c)(2)(ii) in the process of preparing this ROD Amendment.

### **4 Scope and Role of Response Action**

This ROD Amendment selects two remedies: a revised groundwater remedy and a new vapor intrusion remedy. The purpose of the selected groundwater response action is to address the remaining groundwater contamination and to achieve groundwater cleanup levels, i.e., drinking water standards.



The purpose of the selected response actions for the vapor intrusion pathway is to minimize or eliminate human exposure to vapor intrusion associated with the remaining groundwater contamination.

## 5 Site Characteristics

In the Site vicinity, groundwater generally flows to the northwest towards San Francisco Bay. Groundwater contamination at the Site is generally found in two distinct shallow water-bearing zones: the A zone and the B zone. The A zone is approximately 10 to 20 feet below ground surface (bgs), and the B zone is approximately 30 to 40 feet bgs. Shallow groundwater is currently not used for drinking water or other beneficial uses.

The 1991 ROD identified the following Site contaminants of concern (COCs): TCE; 1,1-dichloroethane (1,1-DCA); 1,1-dichloroethene (1,1-DCE); 1,2-dichloroethane (1,2-DCA); trans-1,2-dichloroethene (trans-1,2-DCE); tetrachloroethylene (PCE); toluene; 1,1,1-trichloroethane (1,1,1-TCA); methylene chloride; chloroform; and benzene. For many of these COCs cleanup levels have been met, therefore, the COCs identified in the 1991 ROD have been revised (Table 1) to reflect over 20 years of monitoring data. TCE is the primary COC at the Site and the maximum concentration detected in 2010 is 79 µg/l.

**Table 1. Cleanup Levels for Chemicals of Concern in Groundwater  
CTS Superfund Site, Mountain View, California**

Chemical	Maximum Concentration Detected in 2010 (µg/L)	Cleanup Level (µg/L)
TCE	79	5
cis-1,2-DCE <sup>1</sup>	340	6
trans-1,2-DCE	11	10
1,1-DCE	33	6
1,1-DCA	31	5
Vinyl Chloride <sup>1</sup>	0.25	0.5

Notes: <sup>1</sup> Chemicals added as COCs by this ROD Amendment.

VOCs currently at concentrations above their respective Site cleanup levels, known as maximum contaminant levels (MCLs), are TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, and 1,1-DCA. Due to its potential to be formed by the degradation of TCE or 1,2-DCE, vinyl chloride is also considered a chemical of potential concern in shallow groundwater at the Site. EPA is adding two COCs: cis-1,2-DCE since it is the main transformation/breakdown product of TCE; and vinyl chloride due to its potential to form from degradation of TCE or cis-1,2-DCE. **Figure 2** shows the estimated current (2010) extent of the shallow TCE groundwater plume.

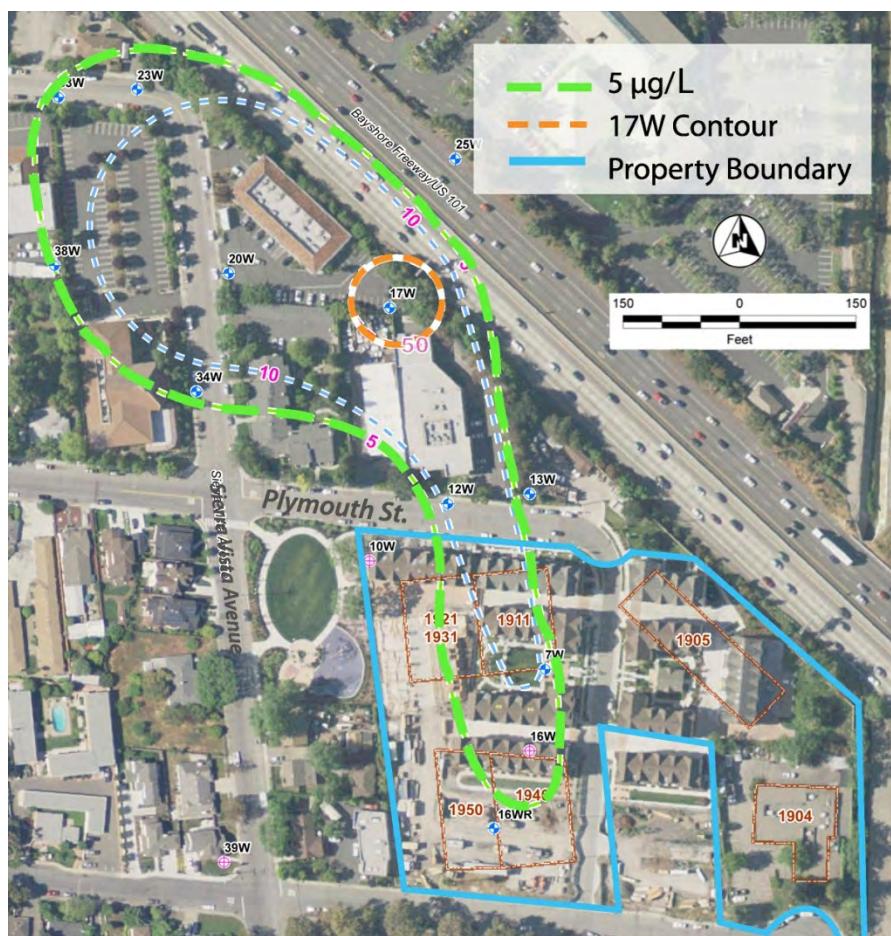


Figure 2. Extent of the TCE Plume in Shallow Groundwater

## 5.1 Supplemental Remedial Investigation

### Scope of the Supplemental Remedial Investigation

EPA conducted supplemental groundwater and vapor intrusion investigations at the Site in 2010 to gather the information necessary to evaluate remedial alternatives for groundwater and vapor intrusion. All data used to define residual contamination in shallow groundwater and to evaluate the potential vapor intrusion pathway at the Site were described in the *Supplemental Remedial Investigation Report, CTS Printex Superfund Site, May 2011*. Collectively, these data were used to assess potential health risks from Site contamination.

### Findings of the Supplemental Remedial Investigation

**Groundwater:** EPA found no current complete exposure pathway that could threaten human health or the environment. Groundwater VOC concentrations are generally decreasing and for most parts of the Site the contaminant plume has decreased in size. However, groundwater VOC concentrations remain above cleanup levels defined in the 1991 ROD. In addition, Monitoring Well 17W, located downgradient of the former source area, has elevated VOC concentrations exceeding groundwater cleanup levels relative to other portions of the Site. This mass of

*ROD Amendment – CTS Printex Superfund Site – September 2011*

residual VOC contamination is situated in an area where the A and B zones appear to connect at depths of 15 to 30 feet bgs. It is likely this residual mass will continue to contribute contaminants to the A and B zones.

The biological transformation or degradation process primarily responsible for the formation of cis-1,2-DCE and vinyl chloride from TCE is referred to as reductive dechlorination. For the more highly chlorinated ethenes, such as TCE, reductive dechlorination degradation occurs more rapidly than the biological transformations of less chlorinated ethenes (cis-1,2-DCE and vinyl chloride). The presence of cis-1,2-DCE in the shallow groundwater at the Site indicates that biological transformation by reductive dechlorination is occurring. Oxidation-reduction potential (ORP) measurements collected during the Supplemental Remedial Investigation indicate conditions suitable for the biochemical reactions associated with reductive dechlorination. Although the low concentrations of vinyl chloride may suggest that degradation from 1,2-DCE to vinyl chloride is limited at some areas of the Site, vinyl chloride biological transformation also occurs under aerobic conditions. The variation of dissolved oxygen concentrations and ORP measurements in groundwater at the Site suggest that vinyl chloride may be subject to aerobic biodegradation.

Groundwater monitoring data suggests natural attenuation is occurring, that is, physical, chemical, and/or biological processes are reducing the mass, toxicity, mobility, volume, and concentration of contaminants in shallow groundwater. EPA evaluated two separate lines of evidence (trends in TCE and 1,2-DCE concentration levels and predictive modeling<sup>1</sup>) to indicate that MNA in low concentration portions of the plume would be successful in attaining groundwater remediation objectives (See Appendices A,B and C). Although there is some uncertainty demonstrated by fluctuating concentrations in the monitoring data, most likely due to matrix effects within the subsurface, COC concentrations throughout the plume initially increased following groundwater extraction followed by a general decline from 1997 to 2010 suggesting initial sorption followed by volatilization and biotic transformations. The subsurface hydrogeology is complex and COC concentrations at the Site have generally shown periods of unpredictability demonstrated by concentration fluctuations from year-to-year since the system was turned off in 1996.

For example, at monitoring well 23W located in the A-zone water bearing unit at the leading edge of the plume, the TCE concentration initially increased from 8.6 to 30 µg/l, after pumping ended in 1996, then dropped in December 1997 to 5.2 µg/l. The median TCE concentration since 1997 is 6 µg/l, just above the cleanup level of 5 ug/l. TCE concentrations are stable based on the Mann-Kendall Trend Test Analysis (Level of Significance = 0.05). The median concentration of 1,2-DCE (total of both cis and trans isomers) is 13.5 µg/l and concentrations are stable i.e., no significant trend, based on the Mann-Kendall Trend Test.

At the leading edge of the plume in the B-zone, the median TCE concentration over the same 12-year monitoring period at monitoring well 22W is 5.5 µg/l which is also just above the cleanup level for TCE of 5 ug/l. However, TCE concentrations appear to be trending upward based on

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<sup>1</sup> See also *Final Focused Feasibility Study, Part II: Groundwater*, Appendices A, B, F, and G (May 2011).



the Mann-Kendall Trend Test Analysis. Conversely, the median 1,2-DCE concentration is 4.2 µg/l, which is below the cleanup level of 6 µg/l for cis-1,2-DCE. In addition, 1,2-DCE concentrations are trending downward (Mann-Kendall Trend Test, LOS = 0.05).

Over the same time period, monitoring well 33W located in the A-zone water bearing unit at the leading edge of the plume, the TCE concentration has varied between 2.6 and 6.6 µg/l after pumping ended in 1996. The median TCE concentration is 5.5 µg/l, just above the cleanup level of 5 µg/l. TCE concentrations are stable based on the Mann-Kendall Trend Test Analysis (Level of Significance = 0.05). The median concentration of 1,2-DCE (total of both cis and trans isomers) is 3.2 µg/l and concentrations are stable based on the Mann-Kendall Trend Test.

Also in the A-zone, monitoring well 20W, the TCE concentration has fluctuated between 1.9 and 46 µg/l since 1997. The median TCE concentration is 20.5 µg/l and the TCE concentrations are stable based on the Mann-Kendall Trend Test Analysis (Level of Significance = 0.05). The median concentration of 1,2-DCE (total of both cis and trans isomers) is 11 µg/l and concentrations appear to be trending upward based on the Mann-Kendall Trend Test.

Thus, for areas downgradient of the residual contaminant mass around monitoring well 17W, natural attenuation alone has been able to maintain the concentrations of TCE and 1,2-DCE in monitoring wells 23W (A-zone) and 22W (B-zone) near or below the cleanup levels. Modeling estimates project that by removing the residual contaminant mass around monitoring well 17W will enable natural attenuation to effectively reduce COC concentrations in the downgradient wells, which include monitoring wells 20W, 22W, and 23W.

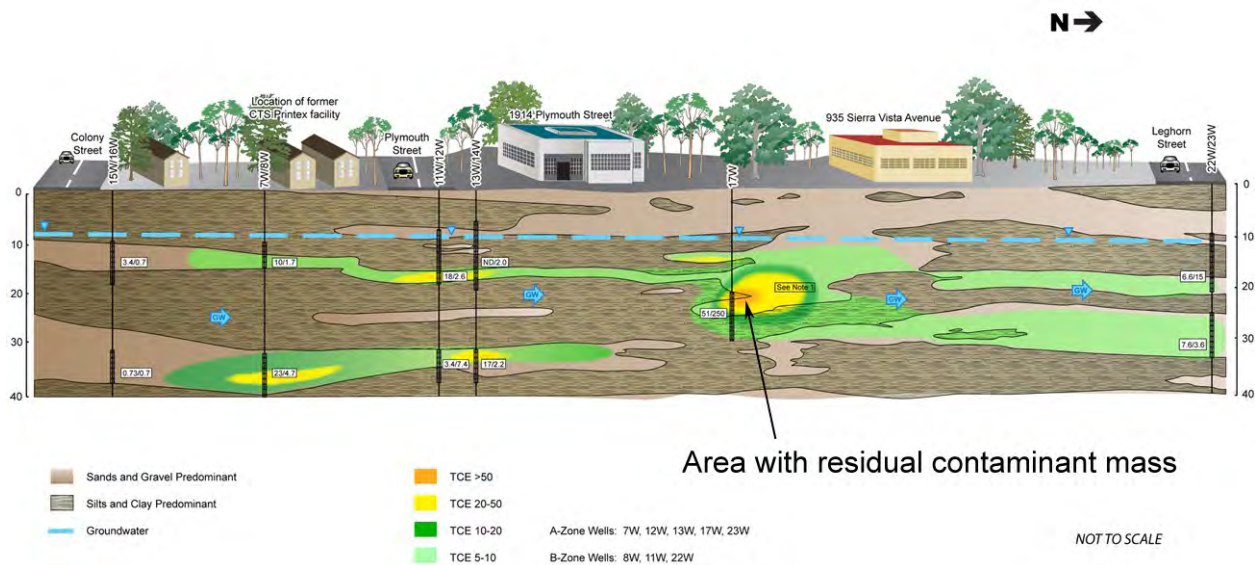
Groundwater data from monitoring W11 located upgradient of well 17W show median TCE and 1,2-DCE concentrations of 17.6 and 25.5 µg/l, respectively, and these concentrations have been stable since the original remedy was discontinued in 1996.

More importantly, groundwater data from samples taken at temporary wells in 2010 indicate that the contaminant plume has not migrated beyond the current groundwater monitoring network at the Site. EPA concludes that based on the Site data the plume is stable and suggests natural attenuation is occurring outside the area of residual mass.

Key findings from the Supplemental Remedial Investigation updated the Site Conceptual Model as follows: (a) the shallow groundwater plume is stable; (b) while the shallow groundwater (A and B zones) has low VOC concentrations, several chemicals have concentrations above their applicable cleanup levels; (c) the primary VOC contaminants in the shallow groundwater are TCE and cis-1,2-DCE; (d) an area of residual contaminant mass is located near well 17W at depths of 15 to 30 feet bgs (see **Figure 3**) and at maximum concentrations of 79 µg/L for TCE and 340 µg/L for 1,2-DCE, respectively; and (e) natural attenuation processes are occurring, essentially reducing the concentrations of TCE, cis-1,2-DCE and vinyl chloride.

**Vapor Intrusion Pathway:** The Supplemental Remedial Investigation results support the following conclusions with respect to the vapor intrusion pathway.

Indoor air concentrations were below the screening criteria for indoor air or were similar to outdoor (ambient) air levels. The indoor air screening criteria used was the EPA Regional Screening Levels (RSLs) for Residential and Commercial/Industrial Indoor Air Quality of 1 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and 6  $\mu\text{g}/\text{m}^3$ , respectively, for TCE, along with the appropriate RSLs for other VOCs detected in shallow groundwater and/or identified in the 1991 ROD. Sub-slab soil vapor concentrations for two buildings on Plymouth Street (1914 and 1924), however, were elevated, such that any future building at those locations – buildings with different foundation structures or air circulation systems – could potentially accumulate indoor air concentrations exceeding the screening criteria for TCE. As these buildings are located downgradient of the former CTS Printex facility and former source area, volatilization from the dispersed shallow VOC groundwater contamination is the likely source of the vapor concentrations in the sub-slab areas of these buildings.



**Figure 3. Location of Residual Contaminant Mass in Vicinity of Well 17W**

Volatile contaminants found in shallow soils and groundwater may migrate upward through the soil as a vapor and enter into buildings through cracks in floors, plumbing/piping conduits or utility corridors. TCE found in shallow A zone groundwater is the primary source for vapor intrusion at the Site, generally defined by the area where TCE concentrations in shallow groundwater are greater than 5 micrograms per liter ( $\mu\text{g}/\text{L}$ ), or parts per billion (ppb). Indoor air concentrations for all COCs were also below the screening criteria for commercial buildings even when the indoor air ventilation systems were not operating.

## **5.2 Focused Feasibility Studies for Groundwater and the Vapor Intrusion Pathway**

Based on the findings of the Supplemental Remedial Investigation, the Focused Feasibility Studies for Vapor Intrusion and Groundwater (Parts 1 and 2) evaluated a range of remedial alternatives that can be used to mitigate potential vapor intrusion into existing and future buildings and clean up the contaminated groundwater.

## **6. Current and Potential Future Land and Resource Uses**

The current land use at the Site is commercial/light industrial and residential. Based on discussions with the City of Mountain View, the reasonably anticipated future land use will remain as commercial/light industrial and residential.

Groundwater at the Site is not currently used for drinking water. Use of the groundwater beneath the former CTS Printex facility is restricted pursuant to a recorded land use covenant, and all of the groundwater in the area is subject to well standards under Santa Clara Valley Water District (SCVWD) Ordinance 90-1, which requires all wells to be sealed from the surface to 50 feet bgs at minimum.

Although groundwater at the Site is not currently used for drinking water or other beneficial uses, the Water Board has designated drinking water as a potential beneficial use for the Santa Clara Valley Basin, as documented in the San Francisco Bay Basin, Water Quality Control Plan (Basin Plan). Based on this designated beneficial use, groundwater at the Site must be cleaned up to drinking water standards which are the health protective MCLs. The CTS Printex Site is not located in an environmentally sensitive area.

## **7 Summary of Site Risks**

This section presents a brief summary of Site risks for groundwater and vapor intrusion and the bases for taking the response actions to address the groundwater and vapor intrusion pathways at the CTS Printex Site.

### **7.1 Shallow Groundwater**

Since the original remedy (groundwater extraction and discharge to sewer) was not able to achieve cleanup levels and restore shallow groundwater to its beneficial use as a potential drinking water source (i.e., COC concentrations are greater than their respective drinking water standard), a modification to the groundwater remedy is necessary to reduce COC concentrations in shallow groundwater to meet the Remedial Action Objectives (RAOs). Since the health protective drinking water standards have not changed for the COCs listed in **Table 1**, the risk assessment presented in the 1991 ROD was not updated as part of this ROD Amendment.

### **7.2 Vapor Intrusion Pathway**

The 1991 ROD identified the potential long-term exposure risk from TCE and other chemicals of concern through the vapor intrusion pathway, but did not develop RAOs for this pathway. In 2005, an Environmental Site Assessment was conducted at the former CTS Printex properties to evaluate whether occupants of the proposed residential redevelopment, as well as construction workers associated with the redevelopment, would be subject to unacceptable exposures to TCE *ROD Amendment – CTS Printex Superfund Site – September 2011*

as a result of vapor intrusion. Soil and soil vapor samples were collected to evaluate potential exposure of future residents and construction workers to TCE through ingestion, dermal contact, and inhalation of dust-borne particulates and outdoor air emissions. In 2006, the properties were sold and redeveloped for residential use. As a precautionary vapor intrusion mitigation measure, vapor barriers and passive sub-slab ventilation systems were installed beneath all the buildings. Indoor air sampling was conducted prior to each building's occupancy and confirmed that subsurface vapor intrusion was not impacting indoor air quality.

As part of the supplemental remedial investigations performed in 2010, EPA conducted indoor and outdoor air sampling for the other four existing buildings (three commercial buildings and one apartment building complex) at the Site, all located north of Plymouth Street. The indoor air results were compared against outdoor "ambient" air concentrations and long-term health-based indoor air screening levels. Indoor air results for both commercial and residential building types did not exceed their respective indoor air screening levels for residential and commercial buildings. No Site COCs were detected in residential buildings. TCE was the only COC detected in indoor air in commercial buildings.

The sub-slab soil vapor TCE concentrations for two of the three commercial buildings sampled were between 2,900 and 8,500  $\mu\text{g}/\text{m}^3$ . These levels indicate a potential for vapors to enter the overlying building at concentrations exceeding indoor air action levels if building type or building foundation conditions change significantly (e.g., penetrations through slab foundation, preferential pathways into the building, or new building construction).

EPA evaluated all data collected to date to assess potential vapor intrusion pathways at the Site and determined that future groundwater and land use conditions may change. Therefore, response actions are needed to ensure that occupants of any future buildings are protected from the potential or anticipated future risk of subsurface groundwater contamination migrating into buildings above indoor air cleanup levels.

Therefore, the selected vapor intrusion remedy identified in this ROD Amendment is necessary to protect the health of building occupants. The potential for vapor intrusion will be further reduced as VOC concentrations in shallow groundwater reach cleanup levels.

### **7.3 Indoor Air Cleanup Levels for CTS Printex Chemicals of Potential Concern**

For the CTS Printex Site, EPA used Regional Risk Screening Levels (RSLs) and Site-specific information as a basis for setting Site-specific action levels and cleanup standards, where appropriate. EPA adopted the RSLs as indoor air cleanup levels for residential and commercial worker exposures.

Table 2 lists the indoor air cleanup levels for residential buildings and commercial buildings at the Site. For this Site, EPA established a TCE indoor air cleanup level of one (1) microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) for residential buildings, and 6  $\mu\text{g}/\text{m}^3$  for commercial/non-residential buildings. The cleanup levels for TCE in air are risk-based concentrations, set to be protective against carcinogenic risks as well as other health effects associated with long-term exposure to

TCE in residential and nonresidential workplace settings. The TCE indoor air cleanup level is set to correspond to a one-in-one million ( $1 \times 10^{-6}$ ) excess lifetime cancer risk level.

**Table 2. Indoor Air Cleanup Levels for Residential & Commercial Buildings  
CTS Printex Superfund Site, Mountain View, California**

Chemical <sup>1</sup>	Indoor Air Cleanup Level ( $\mu\text{g}/\text{m}^3$ )		Comments
	Residential	Commercial (Non-Residential)	
1,1-DCA	2	8	Based on $1 \times 10^{-6}$ lifetime cancer target risk
1,1-DCE	210	880	Based on non-cancer hazard index of 1
trans-1,2-DCE	63	260	Based on non-cancer hazard index of 1
cis-1,2-DCE	63	260	Not Available. Based on trans-1,2-DCE non-cancer hazard index of 1
TCE	1	6	Based on $1 \times 10^{-6}$ lifetime cancer target risk
Vinyl Chloride*	0.2	3	Based on $1 \times 10^{-6}$ lifetime target cancer risk

Notes: \* Detected in shallow groundwater, but not at concentrations above its groundwater cleanup level.

## 8 Remedial Action Objectives

RAOs are specific goals for protecting human health and the environment. The 1991 ROD established the following RAO:

- Reduce levels of chemicals in groundwater and restore groundwater to its beneficial use as a potential drinking water source.

In the 1991 ROD, no RAOs for the vapor intrusion pathway were identified.

This ROD Amendment establishes two additional RAOs, one for groundwater and one for vapor intrusion:

- Accelerate the reduction of vapor intrusion from Site COCs in shallow groundwater and soil gas to levels that are protective of current and future building occupants, such that the need for a vapor intrusion remedy would be minimized or no longer necessary.
- Protect occupants of commercial and residential buildings at the Site by preventing subsurface Site contamination from migrating into indoor air above cleanup levels for long-term exposure.



## 9 Description of Remedial Alternatives

Alternatives are presented separately for groundwater cleanup and vapor intrusion control.

### 9.1 Description of Groundwater Remedial Alternatives

This section summarizes the remedial alternatives developed in the *Final Focused Feasibility Study: Part 2 – Groundwater*.

#### Common Elements for Groundwater Remedial Alternatives

Institutional controls, or ICs, are non-engineered instruments, such as legal and administrative controls, that help minimize the potential for human exposure to contamination and protect the integrity of an engineered remedy. ICs are intended to affect human activities in such a way as to prevent or reduce exposure to Site contaminants.

All alternatives described in the *Final Focused Feasibility Study* included the following ICs to restrict groundwater use: (1) the existing “environmental restriction” covenant for 1900 – 1950 Cambridge Drive; 841 – 862 Avery Drive; 1900 – 1932 Aberdeen Lane; 851 – 863 Donovan Way; 1900 – 1938 Newbury Drive (also known as Gables End properties, formerly the CTS Printex plant property, known as 1905, 1911, 1921, 1931 Plymouth Street and 1916, 1930, 1940, and 1950 Colony Street), Mountain View, California; and (2) SCVWD Ordinance 90-1 (restricting well drilling). The environmental restrictive covenant was recorded in 2010 and prohibits the following activities: (1) any use of the groundwater below the Gables End properties without prior written approval by EPA; (2) any activities at the Gables End properties that may impact the groundwater or interfere with groundwater monitoring conducted in accordance with remedies described in the ROD (as it may be amended) unless approved in writing by EPA; and (3) any interference with the continued operation and maintenance of the vapor intrusion prevention and monitoring systems, as described in the developer’s Risk Management Plan (GeoSyntec, 2006b), and as approved by EPA as part of the Operations, Monitoring and Maintenance Plan (OMMP).

SCVWD Ordinance 90-1 is a well permitting program and requires all wells to be sealed from the surface to 50 feet bgs at minimum. In combination, these ICs prevent the use of the contaminated groundwater at the Site for drinking water. Except for Alternative 1, No Action, all alternatives included groundwater monitoring to evaluate the effectiveness of the alternative.

For each alternative except Alternative 1, No Action, the *Final Focused Feasibility Study* provided estimated timeframes to achieve cleanup levels. The estimated timeframes were based on groundwater monitoring trend analysis and computer model results. These estimates were intended strictly for comparison purposes and not to predict an exact Site cleanup time for any alternative.

Alternatives 2B, 3A, 3B, and 3C would rely on monitored natural attenuation or MNA as part or all of the remedy (Alternative 4) to restore shallow A and B zone groundwater to its future beneficial use as a source of drinking water. Natural attenuation relies on naturally occurring physical, chemical, and/or biological processes that act without treatment to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in shallow groundwater. Two

separate lines of evidence (trends in TCE and 1,2-DCE concentration levels and predictive modeling<sup>2</sup>) were used to indicate that MNA would be successful in attaining groundwater remediation objectives. However, EPA has determined that a contingency measure should be implemented if, after 15 years, MNA cannot be demonstrated to have achieved the cleanup levels for areas of the Site north of Plymouth Street. The contingency measure would require application of the active remediation technology described in each alternative. In addition, an enhanced groundwater monitoring program would be developed as part of MNA to demonstrate that conditions are suitable for the complete biodegradation of TCE and other VOCs and to evaluate the performance of the natural attenuation processes.

Total present worth costs for each alternative were calculated using a discount rate of 7 percent and an annual cost escalation rate of 2 percent in accordance with EPA guidance and are approximate (+50% and – 30%) based on the estimated cleanup time for each alternative.

The alternatives evaluated for groundwater were:

- Alternative 1 – No Action
- Alternative 2A – Groundwater Extraction, and Monitoring (1991 Remedy)
- Alternative 2B – Groundwater Extraction, MNA, and ICs
- Alternative 3A – In-situ Chemical Oxidation (ISCO), MNA, and ICs
- Alternative 3B – Enhanced Anaerobic Bioremediation (EAB), MNA, and ICs
- Alternative 3C – In-situ Chemical Reduction (ISCR), MNA, and ICs
- Alternative 4 – Monitored Natural Attenuation (MNA) and ICs

#### **Alternative 1 – No Action**

EPA is required to consider the no-action alternative as a baseline for comparison to the other remedial alternatives. Under this alternative, the existing land use covenant would remain in place, and no active remediation would be implemented.

#### **Alternative 2A – Groundwater Extraction and Monitoring (1991 ROD Remedy)**

Approximately nine groundwater extraction wells would be installed throughout the current extent of the plume, consistent with the original remedy, to remove contaminated shallow groundwater until cleanup levels are met. Extracted water would be discharged to the sanitary sewer for subsequent treatment at a wastewater treatment facility. The estimated time to construct this alternative is one year, and the estimated cleanup time frame is 22 years.

The estimated capital cost for Alternative 2A is \$855,000, with average annual operation and maintenance (O&M) costs of \$256,400. The 22-year total present worth is \$4,482,000.

#### **Alternative 2B – Groundwater Extraction, MNA, and ICs**

Approximately seven groundwater extraction wells would be installed at select locations, including the area of residual contaminant mass near well 17W, to remove higher VOC

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<sup>2</sup> See Appendices A, B, and C. Also, see *Final Focused Feasibility Study, Part II: Groundwater*, Appendices A, B, F, and G (May 2011).

concentrations. MNA would be used in areas of low VOC groundwater concentrations not subject to groundwater extraction. An enhanced groundwater monitoring program would be included as part of MNA to confirm suitable conditions for the complete biodegradation of TCE and other VOCs and to evaluate the performance of the natural attenuation processes. The estimated time to construct this alternative is approximately one year, and the estimated length of time required to achieve cleanup is 22 years.

The estimated capital cost for Alternative 2B is \$695,000, with average annual O&M costs of \$228,300. The total present worth is \$3,976,000.

### **Alternative 3A – In-situ Chemical Oxidation (ISCO), MNA, and ICs**

In-situ chemical oxidation is a treatment process used to convert contaminants such as TCE into water, carbon dioxide, and chloride salts. ISCO would require injection of an oxidant (a chemical that produces a reaction) into shallow groundwater within the area with residual contaminant mass located in the vicinity of monitoring well 17W (see **Figure 3**). To achieve a reasonably uniform delivery of the oxidant, an injection grid layout would be established across the treatment area (approximately 7,000 sq. ft). For the rest of the plume, i.e., outside the area of residual mass, reduction of contaminant concentrations in shallow groundwater would occur by MNA. If, after 15 years, MNA has not reduced COC concentrations to the cleanup levels north of Plymouth Street, then ISCO would be applied to those areas as well.

For the area with active ISCO treatment, the time required to achieve cleanup levels is estimated at less than one year. For other portions of the plume outside the active treatment zone, and under MNA, the estimated time to achieve cleanup levels by natural attenuation is approximately 15 years.

The estimated capital cost for Alternative 3A is \$2,365,000, with average annual O&M costs of \$68,500. The total present worth is \$3,197,000 over the 15-year timeframe.

### **Alternative 3B – Enhanced Anaerobic Bioremediation, MNA, and ICs (EPA's Selected Alternative)**

Enhanced anaerobic bioremediation (EAB) consists of adding a suitable chemical substrate (e.g., lactate, emulsified oils, molasses, ethanol, etc.) and bacteria throughout the shallow groundwater in the area with residual contaminant mass located in the vicinity of well 17W (see **Figure 3**). Under suitable anaerobic (without oxygen) conditions, the VOCs in groundwater will biodegrade to intermediate by-products, and then eventually to nontoxic end products. To distribute the substrate and bacteria throughout the treatment area (approximately 7,000 sq. ft), a flushing or recirculation system is created by extracting groundwater and then re-injecting this groundwater. For the rest of the plume, i.e., outside the area of residual mass, reduction of contaminant concentrations in shallow groundwater would occur by MNA. If, after 15 years, MNA has not reduced COC concentrations to the cleanup levels north of Plymouth Street, then EAB would be applied to those areas as well.



The time required to achieve the MCLs in the area of active EAB remediation is approximately two to four years. For areas using natural attenuation, the estimated time to achieve cleanup levels is approximately 15 years.

Alternative 3B has an estimated capital cost of \$859,000, with average annual O&M costs of \$72,900. The total present worth is \$1,766,000 over the 15-year timeframe.

#### **Alternative 3C – In-situ Chemical Reduction (ISCR), MNA, and ICs**

Zero-valent iron, such as cast iron particles, can chemically reduce TCE and the other VOCs to intermediate by-products and eventually to harmless end products. Similar to Alternative 3A, this alternative would involve injecting a solution containing zero-valent iron into shallow groundwater in the area with residual contaminate mass located in the vicinity of well 17W (see **Figure 3**). For the rest of the plume, i.e., outside the area of residual mass, reduction of contaminant concentrations in shallow groundwater would occur by MNA. If, after 15 years, MNA has not reduced COC concentrations to the cleanup levels north of Plymouth Street, then ISCR would be applied to those areas as well.

The estimated time to complete the zero-valent iron injections is less than one year, with the length of time required to achieve cleanup levels in the treated area estimated to be less than four years. For areas using natural attenuation, the estimated time to achieve clean up levels is approximately 15 years.

The estimated capital cost for Alternative 3C is \$1,542,000, with average annual O&M costs of \$68,500. The total present worth is \$2,374,000 over the 15-year timeframe.

#### **Alternative 4: Monitored Natural Attenuation (MNA) and ICs**

MNA alone would be used as the remedy to restore shallow A and B zone groundwater to its future beneficial use as a source of drinking water. While annual monitoring to date has indicated cleanup measures implemented at the Site have reduced the footprint of the plume and reduced concentrations of several COCs to below the MCLs, modeling projections, suggest using MNA alone may take 70 to 100 years to achieve cleanup levels<sup>3</sup>.

Alternative 4 has no capital costs since all monitoring wells are in place. The estimated average annual O&M costs are \$33,800. The total present worth is \$661,000, based on a 30-year time frame.

## **9.2 Description of Vapor Intrusion Remedial Alternatives**

This section summarizes the remedial alternatives developed in the *Final Focused Feasibility Study: Part I – Vapor Intrusion Pathway*.

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<sup>3</sup> See *Final Focused Feasibility Study, Part II: Groundwater*, Appendix A (May 2011).

### **Common Elements for Vapor Intrusion Remedial Alternatives**

Each alternative, with the exception of the no-action alternative, includes ICs and monitoring. Alternatives 3 and 4 also include an appropriate engineering control. The engineering control is the physical, operating portion of the remedy that, in this case, prevents vapors from entering an overlying building or prevents vapors from accumulating indoors at concentrations exceeding indoor air cleanup levels for long-term exposure.

As described above, ICs are non-engineered remedy components, and are included in each of the remedial alternatives for vapor intrusion, except the no-action alternative. ICs are a necessary element of this remedy and will accomplish the following goals: (1) ensure maintenance and monitoring of the engineering controls that will prevent levels of indoor contaminants associated with the vapor intrusion pathway from reaching EPA's indoor air action; (2) ensure that the appropriate engineering controls are installed as part of any new development at the Site; (3) provide information to building owners and occupants regarding the vapor intrusion remedy for each building; and (4) provide information to EPA and the Responsible Parties regarding new construction and changes of property ownership at the Site. The ICs that would be used for the Site are the following: City of Mountain View planning and building permit reviews, recorded covenants, and informational outreach. Each of these ICs can be used in combination and would be monitored for effectiveness.

An IC Implementation and Assurance Plan (ICIAP) describing monitoring activities, schedules, and task responsibilities will be prepared for the Site. Applicable ICs for each property would be included in an Operation, Maintenance, and Monitoring Plan for future (new) construction.

Building permit reviews would be conducted by the City of Mountain View – in line with the similar program recently adopted for the MEW Superfund site in Mountain View – to notify EPA and the Responsible Parties regarding new building construction at the Site. EPA will work with the City of Mountain View to formalize its planning, permitting, and tracking procedures for the Site. These procedures will include EPA approval of plans to ensure a vapor intrusion control system is part of new building construction, if warranted.

Additionally, informational tracking services may be employed to provide information regarding activities at the CTS Printex Site that could impact the vapor intrusion remedy.

Recorded environmental restriction covenants are “proprietary” ICs. An example of a recorded covenant is the covenant for the former CTS Printex facility property; that covenant prohibits all uses of the groundwater and any interference with the established vapor intrusion control system that were incorporated into the residential development. Covenants only need to be negotiated once for each property, because once recorded, they “run with the land” and are binding and permanent on subsequent property owners, unless terminated in accordance with the terms of the covenant. If mitigation is necessary, recorded covenants would be effective in informing future property owners of vapor intrusion issues and remedial requirements. Future restrictive covenants would be negotiated between property owners and the CTS Printex responsible parties, designating EPA as a third party beneficiary.

Present worth costs are calculated based on a 15 year timeframe, reflecting EPA's estimate of how long it will take to achieve cleanup levels for groundwater.

Cost estimates for Alternative 3 are based on a 7,000 square-foot commercial building. Alternative 4 costs are based on a residential building of 5,000 square feet and a commercial building of 7,000 square feet.

The alternatives evaluated for the vapor intrusion pathway were:

- Alternative 1 – No Action
- Alternative 2 – Monitoring and ICs
- Alternative 3 – Mechanical Indoor Air Ventilation and ICs
- Alternative 4 – Vapor Barrier, Sub-Slab/Sub-Membrane Passive Ventilation (with Ability to Convert to Active), Monitoring, and ICs

### **Alternative 1 – No Action**

EPA is required to consider the no-action alternative as a baseline for comparison to other alternatives. This alternative does not include engineering controls, ICs, or monitoring for vapor intrusion.

### **Alternative 2 – Monitoring and Institutional Controls (ICs)**

This alternative would apply to existing buildings and properties located north of Plymouth Street. The following ICs would be implemented: planning and building permit reviews, and informational outreach for all properties overlying subsurface groundwater contamination at the Site.

Building permit reviews would be conducted by the City of Mountain View (a similar program was recently adopted for the MEW Superfund site) to notify EPA and the responsible parties regarding new building construction or major building modifications at the Site. Additionally, informational tracking services may be employed to monitor and provide information regarding activities at the CTS Printex Site that could impact the vapor intrusion remedy.

There are no capital costs for this alternative, however, the annual cost of monitoring and building permit reviews is estimated between \$5,000 and \$15,000. If an evaluation of new construction is required, one-time monitoring costs are estimated to be \$12,000. The total present worth cost for Alternative 2 is \$105,000 over a 15-year timeframe.

### **Alternative 3 – Mechanical Indoor Air Ventilation and ICs**

Mechanical indoor air ventilation systems (i.e., HVAC systems) in commercial buildings can prevent vapor intrusion and achieve indoor air quality similar to outdoor air by (1) creating a slightly higher pressure inside the building, and (2) increasing the air exchange rate to reduce indoor VOC concentrations. This alternative is only applicable to future non-residential/commercial buildings because the mechanical ventilation systems of residential buildings cannot be consistently managed and operated.

At the time of new development or new building construction, data collection activities for lines of evidence, i.e., groundwater monitoring, soil gas samples, confirmatory indoor air samples, etc., may be necessary to evaluate the potential for vapor intrusion.

Initial capital costs to install an HVAC system for a new commercial building are not included since HVAC systems are required by law and building code. However, incremental costs for an enhanced HVAC system were estimated for a 7,000 square-foot future commercial building, comparable to existing commercial building sizes at the Site. The incremental capital cost for a ventilation system for a 7,000-square-foot commercial building is estimated to be \$4,000. Annual costs are estimated to be \$13,300. The total present worth cost for Alternative 3 is \$150,000 over a 15-year timeframe.

#### **Alternative 4 – Vapor Barrier, Sub-Slab/Sub-Membrane Passive/Potentially Active Ventilation, Monitoring, and ICs**

This alternative consists of a vapor barrier and a passive, sub-slab ventilation system that could be converted to an active ventilation system. A passive sub-slab ventilation system relies on slight pressure differences to force contaminant vapors to flow away from the building enclosure rather than allowing them to enter from beneath the building foundation. The passive sub-slab ventilation system would consist of: (1) a gravel and/or sand layer with perforated pipe for vapor collection, (2) solid piping in vertical risers that vent to the atmosphere; and (3) a wind-driven turbine located on top of each riser to generate a slight negative pressure at the vapor collection area. This alternative requires installation of a vapor barrier to prevent soil vapors from entering through the building foundation. Post-construction indoor air monitoring would be conducted prior to building occupancy, and periodic inspections would be made to verify the integrity and effectiveness of the alternative's components.

A recorded environmental restrictive covenant would be required to prohibit interference with the operation and maintenance of the vapor intrusion control system and would be effective in informing future property owners of vapor intrusion issues and remedial requirements.

At the time of new development or new building construction, data collection activities for lines of evidence, i.e., groundwater monitoring, soil gas samples, confirmatory indoor air samples, etc., may be necessary to evaluate the potential for vapor intrusion.

**Future Residential Building:** Capital costs for a future 5,000 square-foot residential building are estimated to be \$75,000. Annual costs are estimated to average \$2,600. The total present worth cost of Alternative 4 for a new residential structure is \$105,000 over a 15-year timeframe.

**Future Commercial Buildings:** Capital costs for a future 7,000-square-foot commercial building are estimated to be \$105,000. Annual costs are estimated to average \$2,600. The present worth cost of Alternative 4 for a new commercial building is \$134,000 over a 15-year timeframe.

## **10 Comparative Analysis of Alternatives**

This section presents a comparative analysis of alternatives with respect to EPA's nine evaluation criteria listed in 40 C.F.R. § 300.430. A separate comparative analysis is provided for ground water alternatives and vapor intrusion alternatives.

### **10.1 Evaluation of Groundwater Alternatives**

#### ***Overall Protection of Human Health and the Environment***

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

All of the alternatives, except the no-action alternative, protect human health and the environment, by eliminating, reducing, or controlling risks posed by the Site through treatment, engineering controls, and institutional controls.

#### ***Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)***

Section 121(d) of CERCLA requires that remedial actions at Superfund sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations, which are collectively referred to as "applicable or relevant and appropriate requirements," or "ARARs."

ARARs can be chemical-specific, action-specific, or location-specific. For example, the MCL, or drinking water standard, for TCE (5 µg/L) is a chemical-specific ARAR. All alternatives, with the exception of Alternative 1, will reduce COC concentrations below the MCL cleanup levels and would meet their respective ARARs. However, modeling projections suggest that Alternative 4, MNA, may take up to 70 years to meet cleanup levels.

#### ***Long-Term Effectiveness and Permanence***

Long-term effectiveness and permanence refers to expected residual risks and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup levels have been met.

Each alternative provides long-term protectiveness. Contaminant removal achieved by Alternatives 2A, 2B, 3A, 3B, and 3C would achieve groundwater cleanup levels in less than 30 years; and, for Alternative 4 in 70 years. The original remedy, groundwater extraction (Alternative 2A), did not achieve groundwater cleanup levels. Therefore, both groundwater extraction alternatives 2A and 2B are less effective than Alternatives 3A, 3B, and 3C. Alternatives 3A, 3B, and 3C actively remediate groundwater in the area with residual contamination to permanently remove the COCs with comparable effectiveness and permanence to achieve cleanup levels in a reasonable timeframe.

The effectiveness of any of these alternatives would need to be evaluated as part of regular five-year reviews, as long as groundwater contaminants would remain on-site at concentrations above cleanup levels.

### ***Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment***

The “reduction of toxicity, mobility, or volume through treatment” criterion requires consideration of the anticipated performance of the treatment technologies that may be part of a remedy.

Alternatives 3A, 3B, and 3C would eventually transform the chemical contaminants, through treatment, to nontoxic end products effectively reducing the mobility, volume, and toxicity of groundwater contamination. Alternatives 2A and 2B would involve off-site treatment of extracted groundwater. Alternative 4 does not include treatment as a component of the remedy and, therefore, does not reduce the toxicity, mobility or volume through treatment at this Site.

### ***Short-Term Effectiveness***

Short-term effectiveness addresses the period of time needed to implement the alternative and any adverse impacts that may affect workers, the community, or the environment during the construction and operation of the alternative until cleanup levels are achieved.

All alternatives can be implemented in a way that protects the community and workers and could be constructed in less than one year. Alternative 3A may pose potential risk to workers due to the use of chemical oxidants used for ISCO. Another aspect of short-term effectiveness is the amount of time required to achieve the remediation goals. Alternatives 2A and 2B would require approximately 20+ years to achieve the cleanup, while Alternative 4 would require up to 70 years. Alternatives 3B and 3C would require an estimated 15 years to achieve cleanup and best satisfy this criterion.

### ***Implementability***

Implementability addresses the technical and administrative feasibility of an alternative, from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Alternatives 2A, 2B, 3A, 3B, and 3C employ relatively straightforward remediation technologies which vary with regard to implementability. Because a residential complex was developed over the former source area of the Site, installing new extraction wells in this location under Alternative 2A would be difficult to implement. For Alternatives 2B, 3A, 3B, and 3C, the proposed system components are located in accessible areas. Although implementable, Alternatives 2A, 2B, 3A, 3B, and 3C would require access agreements with private property owners for installation, operation, and monitoring of the remedial system. Materials and services to install, operate, and monitor the components of the alternatives are locally available.



### ***Cost***

EPA compares each alternative based on “present worth” cost, which is a measure of the total project cost over the time frame required to achieve the cleanup goals. The estimated present worth costs for the alternatives, not including the no-action alternative, range from \$661,000 for Alternative 4 to \$4.4 million for Alternative 2A (see Table 3). Alternative 3B has the lowest cost among alternatives with active remediation (Alternatives 2A, 2B, 3A, 3B, and 3C). For Alternative 4, the uncertainty in the time frame to achieve cleanup levels could increase the estimated present worth cost.

**Table 3. Summary of Present Worth Costs – Groundwater Alternatives  
CTS Printex Superfund Site, Mountain View, California**

<b>Alternative</b>	<b>Present Worth (U.S. 2010 \$)</b>			
	<b>Capital</b>	<b>Annual O&amp;M</b>	<b>Periodic</b>	<b>Total</b>
<b>Alternative 1 – No Action</b>	\$0	\$0	\$0	\$0
<b>Alternative 2A – Groundwater Extraction, Monitoring, and ICs</b>	\$855,000	\$3,539,000	\$88,000	\$4,482,000
<b>Alternative 2B – Groundwater Extraction, MNA, and ICs</b>	\$695,000	\$3,024,000	\$77,000	\$3,976,000
<b>Alternative 3A – ISCO, MNA, and ICs</b>	\$2,365,000	\$763,000	\$69,000	\$3,197,000
<b>Alternative 3B – EAB, MNA, and ICs</b>	\$859,000	\$824,000	\$83,000	\$1,766,000
<b>Alternative 3C – ISCR, MNA, and ICs</b>	\$1,542,000	\$763,000	\$69,000	\$2,374,000
<b>Alternative 4 – MNA and ICs</b>	\$0	\$585,000	\$76,000	\$661,000

### ***State Acceptance***

In email correspondence dated September 19, 2011, the State of California through the Regional Water Board, concurred with EPA’s selected remedy to address the contaminated, shallow groundwater at the Site.

### ***Community Acceptance***

During the public comment period, the community expressed a range of opinions on the proposed alternatives. EPA received oral comments from members of the public who attended the June 2011 public meeting, and the entire transcript of the public comments is included in the Administrative Record file for the Site. EPA also received written comments from the community, including residents, property owners, and the Responsible Parties. All of the comments, along with EPA’s responses to them, are presented in Part 3, Responsiveness Summary, of this ROD Amendment.



Most community members expressed their support for Alternative 3B, though several questioned the need for a contingency remedy.

## **10.2 Evaluation of Vapor Intrusion Alternatives**

### ***Overall Protection of Human Health and the Environment***

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

Alternative 1, No Action, would not eliminate, reduce or control risk through any engineering or management controls and would not be protective of human health as long as any potential long-term exposure risk from vapor intrusion exists. Alternative 2 is protective of human health as long as the required ICs are monitored for effectiveness and additional data are generated at the time of new development. Alternatives 3 and 4 are both protective as long as the vapor intrusion control system is properly installed, designed, operated, and maintained.

### ***Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)***

Section 121(d) of CERCLA requires that remedial actions at Superfund sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations, which are collectively referred to as “applicable or relevant and appropriate requirements,” or “ARARs.”

When implemented along with appropriate ICs, Alternatives 2, 3, and 4 would meet their respective Federal and State ARARs. Alternative 1 would not meet ARARs.

### ***Long-Term Effectiveness and Permanence***

Long-term effectiveness and permanence assesses the expected residual risk, the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup levels have been met, and the adequacy and reliability of controls.

Each alternative, except the no-action alternative, provides some degree of long-term protection. Alternatives 3 and 4 provide long-term effectiveness in preventing the entry of VOCs into a building at levels exceeding cleanup levels for long-term exposure. However, the long-term effectiveness and permanence of Alternative 3 would be dependent on a recorded agreement with building owners and operators to use, maintain, and monitor each buildings ventilation system as a vapor intrusion control system to meet RAOs, thus making Alternative 3 more complex and difficult to implement than the other alternatives. Alternative 4 has been demonstrated at other sites to be effective in controlling vapor intrusion in new buildings and is therefore ranked highest.

### ***Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment***

Reduction of toxicity, mobility, or volume through treatment analyzes the anticipated performance of the treatment technologies that may be included as part of a remedy. None of the vapor intrusion remedial alternatives meet this requirement.

Unlike typical remedial alternatives to address contamination, alternatives for vapor intrusion are not necessarily designed to reduce the toxicity, mobility, or volume through treatment of the Site contaminants, but rather are designed to prevent exposure to these contaminants. The groundwater remedy selected in this ROD Amendment addresses the source of subsurface contamination and reduces the toxicity, mobility and volume of that contamination through treatment. Treatment of the Site contaminants causing vapor intrusion will be accomplished by directly addressing the subsurface shallow groundwater contamination in accordance with the selected groundwater remedy identified below in Section 12.1.

### ***Short-Term Effectiveness***

Short-term effectiveness addresses the period of time needed to implement the alternative and any adverse impacts that may affect workers, the community, or the environment during the construction and operation of the alternative until cleanup levels are achieved.

Alternative 2 involves no construction or field work, and, therefore, protection of workers' health is not an issue for this alternative. Alternatives 3 and 4 could be implemented in a short time frame (less than one year) and would be protective of worker's health during construction as long as standard construction procedures are implemented.

### ***Implementability***

Implementability addresses the technical and administrative feasibility of an alternative from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

For existing buildings, Alternative 2 is easily implementable. Alternatives 3 and 4 are implementable for new commercial buildings by incorporating each system's requirements into the design, construction, and operation of the new building. Alternative 3 could be difficult to implement and require consent and cooperation of the property owner to ensure the mechanical indoor air ventilation system is properly operated. Alternative 4 is easily implementable and feasible for new residential or commercial buildings. With regard to ICs, recording of agreements for each building requiring remedial action may be cumbersome but is feasible. Formalization of City of Mountain View procedures to incorporate remedy requirements for new construction is feasible, as it will essentially duplicate a set of procedures being developed for the MEW Site.

### ***Cost***

A comparison of relative costs for the alternatives is presented below for future residential and commercial buildings over a 15-year time frame. This comparison is based on the present worth costs summarized in **Table 4**.

**Residential** – The estimated present worth cost for a 5,000 square foot building under Alternative 4 is \$105,000.

**Commercial** – Alternatives 3 and 4 have comparable costs for a 7,000 square foot non-residential building of \$150,000 and \$134,000, respectively.

**Table 4. Summary of Present Worth Costs – Vapor Intrusion Alternatives<sup>1</sup>**  
**CTS Printex Superfund Site, Mountain View, California**

Alternative	Present Worth (U.S. 2010 \$) <sup>2</sup>		
	Capital	Annual O&M	Total
<b>Alternative 1</b> – No Action	\$0	\$0	\$0
<b>Alternative 2</b> – Institutional Controls	\$0	\$105,000	\$105,000
<b>Alternative 3</b> – Mechanical Indoor Air Ventilation and Institutional Controls	\$4,000	\$146,000	\$150,000
<b>Alternative 4</b> – Vapor Barrier, Sub-slab/Sub-membrane Passive Ventilation, and Institutional Controls	\$105,000	\$29,000	\$134,000

<sup>1</sup> Costs for a new, 7,000 square foot, commercial building.

<sup>2</sup> Present worth based on 15 years (estimated time for groundwater clean-up selected remedy).

### ***State Acceptance***

In email correspondence dated September 19, 2011, the State of California through the Regional Water Board, concurred with EPA's selected remedy to address the potential vapor intrusion pathway at the Site.

### ***Community Acceptance***

During the public comment period, the community expressed a range of opinions on the proposed alternatives. EPA received oral comments from members of the public who attended the June 2011 public meeting and the entire transcript of the public comments is included in the Administrative Record file for the Site. EPA also received written comments from the community, including residents, property owners, and the Responsible Parties. All of the comments, along with EPA's responses to them, are presented in Part 3, Responsiveness Summary, of this ROD Amendment.

While most community members concurred with EPA's preferred vapor intrusion remedy, some stakeholders expressed an opinion that a vapor intrusion remedy was not necessary. Monitoring frequency and level of monitoring will be addressed during implementation of the remedy and part of remedial design.

## 11 Principal Threat Waste

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever possible. Highly toxic or highly mobile source materials that would present a significant risk to human health are generally classified as “principal threat wastes”, and were addressed in the 1991 ROD, thus no principal threat waste remains at the CTS Printex Superfund Site.

## 12 Selected Remedy

EPA’s selected remedy for groundwater is described in Section 12.1. The selected remedy for the vapor intrusion pathway uses a classification system for existing buildings and a tiered approach for future buildings as described in Section 12.2.

### 12.1 Groundwater

Based on information currently available, EPA believes the selected remedy for groundwater meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. As discussed further in Section 14, EPA expects the selected groundwater remedy to satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element.

EPA’s selected remedy is Alternative 3B: Enhanced Anaerobic Bioremediation (EAB), MNA, ICs, and Monitoring.

The revised remedy replaces the original remedy (groundwater extraction and discharge) with:

- Enhanced anaerobic bioremediation for the area with residual contaminant mass near Well 17W;
- Monitored Natural Attenuation (MNA);
- Institutional controls (ICs) to prevent the use of the contaminated groundwater at the Site and any interference with the remedial systems; and
- Monitoring.

Alternative 3B was selected because this alternative would protect human health and the environment and meet ARARs by relying on achieving suitable conditions within the treatment zone to biodegrade the VOCs in shallow groundwater to cleanup levels; the groundwater is estimated to reach cleanup levels within 15 years. Implementation of this remedy can be achieved despite the developed nature of the Site. In addition, the selected remedy described in **Table 5**:

- Achieves the cleanup goals in a reasonable time frame (approximately 15 years) and at less cost than other remedial alternatives using treatment;
- Eliminates the potential for vapor intrusion in a shorter period of time; and
- Combines active remediation with monitored natural attenuation.

**Table. 5 EPA's Selected Remedy – Enhanced Anaerobic Bioremediation (EAB) with MNA**  
**CTS Printex Superfund Site, Mountain View, California**

<b>Alternative Description:</b>		
<ul style="list-style-type: none"> <li>Enhanced anaerobic bioremediation (EAB) would be performed to treat the area of residual chlorinated aliphatic hydrocarbon mass in the vicinity of well 17W. Monitored natural attenuation (MNA) would be applied to achieve groundwater clean-up in the other portions of the plume. Components<sup>4</sup> of the EAB are described below.</li> </ul>		
<ul style="list-style-type: none"> <li>Injection of an organic substrate of sufficient mass to achieve anaerobic conditions in the treatment zone will be performed at selected points distributed throughout the treatment zone. Injection of the organic substrate would occur throughout the A and B zones, beginning at the water table (depth of 10 feet bgs) and continuing to 40 feet bgs.</li> </ul>		
<ul style="list-style-type: none"> <li>Besides the organic substrate, a microbial amendment(s) for bioaugmentation would also be included with the organic substrate injected into the A- and B-Zones. The organic substrate with bioaugmentation will result in the complete biological transformation of the CAHs to ethene.</li> </ul>		
<ul style="list-style-type: none"> <li>Shallow groundwater recirculation (i.e., flushing) systems would be established in each of the A- and B-Zones by installing injection and extraction wells appropriately screened for each zone. Each zone's recirculation system would include an extraction well, ability to augment the extracted groundwater with substrate or amendments, and reinjection by gravity flow at the injection wells. Organic substrate, bioaugmentation, and other amendments would be added to the water being re-injected, as needed. The flushing action of the recirculation system will enhance the distribution of the injected substrate and microbial amendments throughout the treatment zone.</li> </ul>		
<ul style="list-style-type: none"> <li>A treatability study would be performed as part of the remedial system design to evaluate and select the actual organic substrate, appropriate nutrients, bioaugmentation requirements, and other design criteria.</li> </ul>		
<b>Site Characteristics:</b>		<b>Comments:</b>
• Maximum TCE concentration	79 µg/L	Well 17W (2010 sampling event)
• Maximum cis-1,2-DCE concentration	340 µg/L	Well 17W (2010 sampling event)
• Maximum 1,1-DCA	31 µg/L	Well 17W (2010 sampling event)
• Effective porosity	30 %	Assumed
• EAB treatment area	7,700 square feet	See Figure 2
• EAB treatment depth (A and B zones)	30 feet	From top of water table (10 ft bgs) to 40 ft bgs
• EAB treatment volume (void volume)	1,950,000 liters	Calculated
<b>Conceptual Design Components and Assumptions</b>		
<b><i>Enhance Anaerobic Bioremediation</i></b>		
<ul style="list-style-type: none"> <li>Amendment, consisting of organic substrate will be delivered through injection points, with injection zone targeted from depths between 10 and 40 feet bgs.</li> </ul>		

<sup>4</sup> Assumptions subject to change during Remedial Design

**Table. 5 EPA's Selected Remedy – Enhanced Anaerobic Bioremediation (EAB) with MNA**  
**CTS Printex Superfund Site, Mountain View, California**

<b>Alternative Description:</b>	
<ul style="list-style-type: none"> <li>Separate re-circulating (i.e., flushing) systems established within A-Zone and B-Zone. The injection and extraction wells will be screened to target a specific zone, either the A- or B-Zone.</li> </ul>	
<ul style="list-style-type: none"> <li>The re-circulation system will consist of pairs of injection wells (a pair being a well screened in the A-Zone and another well screened in the B-Zone) and 1 pair of extraction wells.</li> </ul>	
<ul style="list-style-type: none"> <li>A laboratory bench-scale test treatability test would be performed to ascertain the necessary amendment contents and dosage.</li> </ul>	
<ul style="list-style-type: none"> <li>Additional sampling and analysis would be performed to evaluate EAB effectiveness for the area being treated. Frequency sampling/analyses would be described in Compliance/General Monitoring</li> </ul>	
<b>Cleanup Goals:</b>	
<i>Chemical</i>	<i>Cleanup Level (µg/l)</i>
<b>TCE</b>	<b>5</b>
<b>cis-1,2-DCE</b>	<b>6</b>
<b>trans-1,2-DCE</b>	<b>10</b>
<b>1,1-DCE</b>	<b>6</b>
<b>1,1-DCA</b>	<b>5</b>
<b>Vinyl Chloride</b>	<b>0.5</b>

The ultimate objective for the groundwater remedial action is to restore contaminated shallow groundwater to its beneficial uses as a future source of drinking water. MNA will be used in part to achieve this objective. Performance of the remedy will be monitored and EPA will evaluate the effectiveness of the selected remedy during the Five-Year-Review process.

EPA has determined that MNA is an appropriate component of the groundwater remedy for the Site based on the following factors:

- Groundwater contaminants at the Site can be effectively remediated by natural attenuation processes as suggested by a shrinking, well-defined plume boundary;
- The contaminant plume is generally stable, with the exception of fluctuating TCE and/or 1,2-DCE concentrations in wells 22W and 20W, areas downgradient from the area of residual mass near Well 17W. EPA expects the COC concentrations in these wells to decrease within the first ten to fifteen years after treatment of the residual mass near Well 17W;
- The ICs already in place will prevent any potential impacts to human health or ecological receptors;
- Groundwater is not currently used as a drinking water resource and is not expected to be used over the time period that the remedy will remain in effect, nor will groundwater

contamination exert a long-term detrimental impact on available water supplies or other environmental resources;

- MNA will be used in conjunction with active remediation and the estimated timeframe to achieve clean levels is reasonable and publically acceptable; and,
- EAB will be implemented to control the remaining residual contaminant mass near Well 17W.

Actual performance of the remedy will include a long-term monitoring program that will continue until remediation objectives have been achieved. The current monitoring program will be enhanced to include increased monitoring frequency, additional geochemical and physiochemical analyses, and the installation of an additional monitoring well downgradient from the EAB treatment zone to assess continued plume stability (i.e., to ensure that the plume is not migrating or has low potential for migration), and expected decreases in COC concentrations consistent with existing monitoring data and predictive analysis.

Although EPA expects MNA to be effective in restoring the aquifer outside of the residual contaminant area, there is some uncertainty associated with ability of MNA to achieve clean up levels after active remediation is completed. A contingency remedy is therefore appropriate here. First, the primary remedy will be implemented and given time to achieve the Remedial Action Objectives. As noted, EPA expects the EAB/MNA remedy to be effective, as demonstrated by monitoring data, within fifteen years of this ROD Amendment. However, if, at the fifteen year mark, these data instead demonstrate the following, EPA will implement the contingency remedy:

- Significant increase in levels of parent contaminants, indicating that other sources may be present;<sup>5</sup>
- Concentration levels of parent contaminants and/or daughter products differ significantly from current concentration trends and modeling predictions; and
- Contaminant plume for parent contaminants and daughter products increase significantly in areal or vertical extent and/or volume from that predicted by modeling estimates.

In that circumstance, EPA will issue an Explanation of Significant Differences decision document and implement EAB for those areas of the Site north of Plymouth Street.

The following ICs have already been implemented to restrict groundwater use: (1) an environmental restriction covenant for 1900 – 1950 Cambridge Drive; 841 – 862 Avery Drive; 1900 – 1932 Aberdeen Lane; 851 – 863 Donovan Way; 1900 – 1938 Newbury Drive (formerly known as 1905, 1911, 1921, 1931 Plymouth Street and 1916, 1930, 1940, and 1950 Colony Street), Mountain View, California; and (2) SCVWD Ordinance 90-1. The restrictive covenant: (1) prevents use of the groundwater below the Gables End properties to be used for any purpose without prior written approval by EPA; and (2) prohibits activities at the Gables End properties that may impact the groundwater or interfere with groundwater monitoring conducted in accordance with remedies described in the ROD (as it may be amended) unless approved in

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<sup>5</sup> Level of Significance = 0.05.



writing by EPA. SCVWD Ordinance 90-1 is a well permitting and well construction standard program and requires all wells within the Site boundary to be sealed from the surface to 50 feet bgs at minimum. In combination, these ICs prevent the use of the contaminated groundwater at the Site for drinking water and will remain in place until cleanup levels have been achieved.

The current land use at the Site will not be affected by the selected remedy.

### **Summary of the Estimated Groundwater Remedy Costs**

The total present worth of the selected remedy is \$1,766,000 over the 15-year timeframe. The estimated capital cost is \$859,000, with average annual O&M costs of \$72,900. A detailed summary of the cost estimate for the selected remedy is described in Appendix D. The estimated capital cost of the contingency measure will add \$118,000 to the remedy<sup>6</sup>.

### **12.2 Vapor Intrusion**

EPA's selected remedy will apply to buildings requiring response actions, as described herein.

The selected remedy for existing buildings located south of Plymouth Street is the installation of a Passive Sub-slab Ventilation with Vapor Barrier, ICs and Monitoring. Installation of the ventilation system and vapor barrier, and recording of an Environmental Restriction Covenant were completed in 2010. The selected remedy for existing buildings located north of Plymouth Street is the implementation of ICs consisting of: planning, permitting, and building requirements to install appropriate engineering controls in future construction. For all future buildings, EPA's selected engineered remedy is the installation of a vapor barrier and passive sub-slab ventilation system (with the ability of convert to active), monitoring, and ICs.

Based on information currently available, EPA believes the selected remedy for the vapor intrusion pathway meets the threshold criteria and provide the best balance of tradeoffs among the alternatives with respect to the balancing and modifying criteria. As discussed further in Section 14, EPA expects the selected remedy to satisfy the following statutory requirements of CERCLA §121(b): (1) be protective of human health and the environment; (2) comply with ARARs; and (3) be cost-effective. The vapor intrusion remedy does not involve active treatment and therefore does not satisfy the statutory preference for treatment as a principal element of the remedy.

### **Existing Buildings**

To determine the appropriate level of action that would be required, EPA has classified existing properties overlying the current extent of the groundwater plume into Areas (see **Figure 4** and **Table 6**) using a multiple-lines-of-evidence approach from all data generated to date. Existing buildings located in Areas B and E have demonstrated through multiple lines of evidence that there is no potential or anticipated future risk for vapor intrusion impacting indoor air quality. Existing residential buildings, located in Area A, have an engineered remedy in place (i.e., vapor barrier with sub-slab passive ventilation system) and currently have indoor air concentrations

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<sup>6</sup> See Appendix G for a description of the contingency remedy including detailed capital cost estimate

below EPA's cleanup level. Unless demonstrated otherwise, continued monitoring and maintenance of that engineering control is required to ensure that indoor air concentrations remain below the indoor air cleanup levels.



**Figure 4. Area Classification for Vapor Intrusion**

**Table 6. Vapor Intrusion Response Actions for Areas of the CTS Printex Superfund Site<sup>1,2</sup>**

Area(s)	Description	Response Action
A	Residential buildings with vapor intrusion control system installed. Confirmatory indoor air concentrations below indoor air cleanup levels.	<p>Ensure continued maintenance and monitoring of passive sub-slab ventilation system with vapor barrier.</p> <p>Ensure continued inspection and maintenance under Operation, Monitoring, and Maintenance Plan.</p> <p>Monitor and maintain proprietary IC (Environmental Restriction Covenant).</p>

**Table 6. Vapor Intrusion Response Actions for Areas of the CTS Printex Superfund Site<sup>1,2</sup>**

<b>Area(s)</b>	<b>Description</b>	<b>Response Action</b>
<b>C, D</b>	Commercial buildings with current indoor air concentrations below indoor air action levels. No current risk for vapor intrusion.  However, buildings have not demonstrated through multiple lines of evidence that there is no potential or anticipated future risk for vapor intrusion at the property exceeding indoor air action levels.	No engineered remedy required. Implement governmental ICs to track new construction/development.
<b>F</b>	Undeveloped Parking Area. Property overlying plume has not demonstrated through multiple lines of evidence that there is no potential or anticipated future risk for vapor intrusion impacting indoor air quality if new buildings are constructed.	Implement governmental ICs to track new construction/development.

<sup>1</sup> Areas overlying shallow groundwater contamination.

<sup>2</sup> Area B removed since no response action was necessary.

To ensure EPA receives sufficient notice of any changes in land use or new construction, ICs are required for Areas C, D, and F (see **Figure 4**).

An IC Implementation and Assurance Plan (ICIAP) describing monitoring activities, schedules, and task responsibilities will be prepared for the Site. Building permit reviews would be conducted by the City of Mountain View (a similar program was recently adopted for the MEW Superfund site) to notify EPA and the responsible parties regarding new building construction or major building modifications at the Site. Additionally, informational tracking services may be employed to monitor and provide information regarding activities at the CTS Printex Site that could impact the vapor intrusion remedy.

In addition, a covenant and environmental restriction is in place for 1900 – 1950 Cambridge Drive; 841 – 862 Avery Drive; 1900 – 1932 Aberdeen Lane; 851 – 863 Donovan Way; 1900 – 1938 Newbury Drive (formerly known as 1905, 1911, 1921, 1931 Plymouth Street and 1916, 1930, 1940, and 1950 Colony Street), Mountain View, California to prevent interference with the operation and maintenance of all elements of the vapor intrusion prevention and monitoring systems described in the RMP (GeoSyntec, 2006b) in accordance with an EPA-approved Operations, Monitoring and Maintenance Plan (OMMP); and that the RWQCB and/or any persons acting pursuant to RWQCB orders shall have reasonable access to specified portions of the Gables End site for the purposes of inspection, surveillance, maintenance, or monitoring.

### Future Buildings/New Construction

To determine the appropriate tier, multiple lines of evidence (e.g., groundwater, soil gas, etc.) will be collected and evaluated at the time of development or new construction and submitted to EPA for review. Once a building has been assigned a tier by EPA, the selected action for a building of that tier would be implemented, including engineering and institutional controls. In the absence of sufficient data, EPA will assign the building to Tier 1. Where multiple lines of evidence indicate that there is no longer the potential for vapor intrusion above indoor air cleanup levels, the proposed building would be categorized as Tier 2. For new buildings, the description of tiers and the corresponding response actions are shown in **Table 7**.

**Table 7. Vapor Intrusion Response Action for Future Buildings/New Construction<sup>1</sup>**

<b>Tier</b>	<b>Description</b>	<b>Response Action</b>
<b>1</b>	Future (new) building(s) on properties where lines of evidence indicate that there is the potential for vapor intrusion into the new building above indoor air cleanup levels <sup>7</sup> .	<ul style="list-style-type: none"> <li>• Implement Sub-slab/Sub-membrane Passive Ventilation with Vapor Barrier.</li> <li>• Perform confirmation indoor air sampling after construction to verify remedial action is effective.</li> <li>• Implement proprietary ICs.</li> </ul>
<b>2</b>	Future (new) building(s) on properties where lines of evidence indicate there is no potential for vapor intrusion into the new building above indoor air cleanup levels.	<p>Perform indoor air sampling after building is constructed to confirm that there is no potential risk and cleanup levels are met.</p> <p>Upon confirmation with EPA approval, then no action is required.</p>

<sup>1</sup> Areas overlying shallow groundwater contamination at time of development.

### Selection of Remedy for the Vapor Intrusion Pathway

EPA's selected remedy to address the vapor intrusion pathway and ensure protection of the human health of building occupants at the Site consists of the following and is also summarized in **Table 8**:

- For Existing Buildings
  - South of Plymouth Street
    - Passive Sub-slab Ventilation with Vapor Barrier, and ICs (already implemented) and Monitoring. The ICs will consist of:
      - Environmental Restriction Covenant (already recorded).
  - North of Plymouth Street Area
    - No engineering control; ICs only. The ICs consist of:

<sup>7</sup> See Table 2, Section 7.3

- Planning, permitting, and building requirements to install appropriate engineering controls in future construction
- For New Construction/Future Buildings
  - Vapor Barrier with Passive Sub-slab/Sub-membrane Ventilation, Monitoring, ICs (with ability to convert to Active Ventilation) and Monitoring. The ICs consist of:
    - Permitting and building requirements to install appropriate engineering controls.
    - Environmental Restriction Covenant
  - Where lines of evidence collected at the time of new construction indicate that there is no potential for vapor intrusion resulting in indoor air concentrations above indoor air cleanup levels described in **Table 2**.
    - Upon confirmation and with EPA approval, no further action required.

**Table 8. EPA's Selected Remedy – Vapor Intrusion Pathway**

<b>Building Scenario</b>	<b>Selected Remedy</b>
<b>Existing Buildings (Commercial and Residential)</b>	
<b>Area A</b>	Passive Sub-slab Ventilation with Vapor Barrier, and ICs (already implemented) and Monitoring. The ICs will consist of: <ul style="list-style-type: none"> <li>• Environmental Restriction Covenant (already recorded)</li> </ul>
<b>Area C, D, and F<sup>8</sup></b>	No engineering control; ICs only. The ICs consist of: <ul style="list-style-type: none"> <li>• Planning, permitting, and building requirements to install appropriate engineering controls in future construction.</li> </ul>
<b>New Buildings/New Construction (Commercial and Residential)</b>	
<b>Tier 1</b>	Vapor Barrier with Passive Sub-slab/Sub-membrane Ventilation, Monitoring, ICs (with ability to convert to Active Ventilation) and Monitoring. The ICs consist of: <ul style="list-style-type: none"> <li>• Permitting and building requirements to install appropriate engineering controls.</li> <li>• Environmental Restriction Covenant.</li> </ul>
<b>Tier 2</b>	No remedy required

<sup>8</sup> Area F comprises a parking lot, which overlies the current extent of the contaminant plume. There is no existing building on Area F.

	<b>Indoor Air Cleanup Level (<math>\mu\text{g}/\text{m}^3</math>)</b>	
<b>Chemical<sup>1</sup></b>	<b>Residential</b>	<b>Commercial (Non-Residential)</b>
1,1-DCA	2	8
1,1-DCE	210	880
trans-1,2-DCE	63	260
cis-1,2-DCE	63	260
TCE	1	6
Vinyl Chloride*	0.2	3

Notes: \* Detected in shallow groundwater, but not at concentrations above its cleanup level.

An IC Implementation and Assurance Plan (ICIAP) describing monitoring activities, schedules, and task responsibilities will be prepared for the Site. Building permit reviews will be conducted by the City of Mountain View (a similar program was recently adopted for the MEW Superfund site) to notify EPA and the responsible parties regarding new building construction or major building modifications at the Site. Additionally, informational tracking services may be employed to monitor and provide information regarding activities at the CTS Printex Site that could impact the vapor intrusion remedy. A recorded environmental restrictive covenant would be required to prohibit interference with the operation and maintenance of the vapor intrusion control system and would be effective in informing future property owners of vapor intrusion issues and remedial requirements.

The covenant and environmental restriction will remain in place for 1900 – 1950 Cambridge Drive; 841 – 862 Avery Drive; 1900 – 1932 Aberdeen Lane; 851 – 863 Donovan Way; 1900 – 1938 Newbury Drive (formerly known as 1905, 1911, 1921, 1931 Plymouth Street and 1916, 1930, 1940, and 1950 Colony Street), Mountain View, California, that prohibits interference with the operation and maintenance of all elements of the vapor intrusion prevention and monitoring systems described in the RMP (GeoSyntec, 2006b) in accordance with an EPA-approved Operations, Monitoring and Maintenance Plan (OMMP); and that the RWQCB and/or any persons acting pursuant to RWQCB orders shall have reasonable access to specified portions of the Gables End site for the purposes of inspection, surveillance, maintenance, or monitoring.

At the time of new development or new building construction, data collection activities for lines of evidence to evaluate the potential for vapor intrusion may consist of groundwater monitoring, soil gas samples, and confirmatory indoor air samples.

### **Summary of the Estimated Vapor Intrusion Remedy Costs**

The 15-year present worth costs of the selected remedy vary by application and if engineering controls are needed for future residential and/or non-residential buildings. Capital costs for a future 5,000 square-foot residential building are estimated to be \$75,000. Annual costs are

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estimated to average \$2,600. The total present worth cost of the selected remedy is \$105,000 for a 5,000 square-foot residential building over a 15-year timeframe. For future non-residential/commercial buildings: Capital costs for a future 7,000-square-foot commercial building are estimated to be \$105,000. Annual costs are estimated to average \$2,600. The present worth cost of the remedy for a new commercial building is \$134,000 over a 15-year timeframe. A detailed summary of the cost estimate for the selected remedy is provided in Appendix E.

### **13 Applicable or Relevant and Appropriate Requirements (ARARs)**

Section 121(d) of CERCLA requires that remedial actions at Superfund sites achieve (or justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. This section selects the ARARs with regard to this Site's groundwater and vapor intrusion remedy.

"Applicable requirements" are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the circumstance at a CERCLA Site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs.

If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. "Relevant and appropriate requirements" are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address situations or problems similar to the circumstances of the proposed response action and are well suited to the conditions of the site. A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR.

An ARAR may be either "applicable" or "relevant and appropriate," but cannot be both. Identification of ARARs must be done on a site-specific basis and involve a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate. When a determination is made that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable. If there is not a specific federal or state ARAR for a particular remedial action, then other criteria or guidelines may be identified as "to be considered" (TBC) criteria. Where EPA determines that TBC criteria are necessary to ensure the protection of human health and the environment, they become mandatory elements of the remedy, equivalent to ARARs.

ARARs fall into three categories: chemical-specific, location-specific, and action-specific requirements. Chemical-specific ARARs are health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Location-specific ARARs set restrictions on certain types of activities based on characteristics of



the site locale. Action-specific ARARs govern particular activities or technologies involved in a remedy and aim to control discrete actions.

### 13.1 Groundwater ARARs

#### *Chemical-specific ARARs*

**Safe Drinking Water Act Regulations, 40 C.F.R. §§ 141.24 and 141.61; California Safe Drinking Water Regulations, 22 California Code of Regulations § 64444:** The Safe Drinking Water Act (SDWA) regulations, 40 C.F.R. Part 141, establish national primary drinking water standards, referred to as maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs), to protect the quality of water in public water systems. The NCP requires that remedial actions for both surface water and groundwater attain any “relevant and appropriate” MCLGs with values *above* zero. 40 C.F.R. § 300.430(e)(2)(i)(B). When the MCLGs are set *at* zero, which is generally the case for a chemical considered to be a carcinogen, the MCL for that contaminant becomes the chemical-specific ARAR instead, where relevant and appropriate. 40 C.F.R. § 300.430(e)(2)(i)(C).

MCLs (and MCLGs) are relevant and appropriate for remedies that involve water which may be used for drinking. Pursuant to the San Francisco Bay Basin, Water Quality Control Plan (Basin Plan), discussed further below, California has established drinking water as a beneficial use of the Site groundwater. Therefore, MCLs are relevant and appropriate to the selected groundwater remedy.

California drinking water standards, under the SDWA, establish primary MCLs for public water systems. If a California drinking water MCL is more stringent than a federal MCL for a specific COC, then the more stringent MCLs was chosen as the potential ARAR. The remedial action objectives based on the MCLs for COCs at the Site are listed in **Table 1**. SDWA also requires monitoring to determine compliance with the MCLs.

**State Water Resources Control Board, Resolution No. 68-16:** Resolution 68-16, also known as the Anti-degradation Policy, requires that high quality waters of the State be maintained or restored, to the maximum extent practicable. Any action that would degrade water quality will be allowed only if the following conditions are met: the action is “consistent with the maximum benefit to the people of the State,” does not unreasonably affect present and anticipated beneficial uses, and does not result in water quality less than that prescribed in the policies of the Water Board and the State Water Resources Control Board. Where degradation is allowed, the discharge must meet best practicable treatment or control, which must prevent pollution or nuisance and result in the highest water quality consistent with maximum benefit to the people of the State. Resolution 68-16 is applicable to the selected remedy, which is designed to restore groundwater quality at the Site.

**State Water Resources Control Board, Resolution No. 92-49, III-G:** Section III-G of this resolution requires cleanup and abatement of the effects of discharges in a manner that promotes attainment of either background water quality or the best water quality which is reasonable. This resolution has the objective of maintaining high-quality waters of the State. Any cleanup level that is less stringent than background must consistent with the maximum benefit to the people of

California, not unreasonable affect anticipated use of the water, and not result in water quality less than that prescribed in Water Quality Control Plans and policies of the State and Regional Water Boards. SWRCB Resolution No. 92-49, Section III-G, is relevant and appropriate. For purposes of this remedy, selection of the MCLs satisfies these requirements.

**San Francisco Bay Basin, Water Quality Control Plan (Basin Plan), Chapters 2 and 3:** The State of California established water quality objectives for the protection of groundwater (and surface water) under the Porter-Cologne Water Quality Control Act. Specifically, the Water Board's Basin Plan (last amended on December 31, 2010) established in Chapter 2, Section 2.2.2, that the beneficial uses of the groundwater basins within the Site boundaries include drinking water, and established in Chapter 3, Section 3.4, water quality objectives for groundwater. The substantive provisions of the Basin Plan, Sections 2.2.2 and 3.4, are applicable to the selected remedy.

***Location-specific ARARs***

None identified

***Action-specific ARARs***

**Underground Injection Control, Safe Drinking Water Act, 42 U.S.C. § 300f-300j, 40 C.F.R. §§ 144.82, 144.83, 146.10:** Parts 144 through 148 of 40 C.F.R. regulate underground injection and are designed to protect groundwater from contamination by subsurface emplacement of fluids. The substantive provisions of Sections 144.82, 144.83, and 146.10 apply to this remedy because treatment substrate will be injected into the groundwater.

Wells for injection of treatment chemicals are designated Class V wells. *See* 40 C.F.R. § 146.5. Section 144.82 prohibits the movement of fluid containing any contaminant into an underground source of drinking water if it would cause a violation of primary drinking water standards under 40 C.F.R. Part 141, or other health-based standards, or may otherwise adversely affect the health of persons. Section 144.83 specifies inventory requirements for the operation of injection wells. Section 146.10 contains well plugging and abandonment requirements. Injection well closure must prevent emplaced fluid movement.

**13.2 Vapor Intrusion Pathway ARARs**

***Chemical-Specific ARARs***

There are no chemical-specific ARARs for the vapor intrusion remedy.

***Location-Specific ARARs***

There are no location-specific ARARs for the vapor intrusion remedy.

***Action-Specific ARARs***

**Air Emissions, Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rules 47 and 40:** BAAQMD Regulation 8, Rule 47 addresses emission control requirements for organic compound emissions from air stripping and soil vapor extraction systems. This Rule

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may be relevant and appropriate for emissions of VOCs from Active Sub-slab Depressurization systems or Sub-membrane Depressurization systems. Rule 47 requires a control device reducing emissions by at least 90 percent by weight for those operations that emit benzene, vinyl chloride, PCE, methylene chloride and/or TCE. BAAQMD Regulation § 8-47-301. Section 8-47-301 does not apply if the operation emits no more than one of the following compounds: benzene, vinyl chloride, TCE, PCE, or methylene chloride, and if benzene emissions do not exceed 0.05 pounds per day, vinyl chloride emissions do not exceed 0.2 pounds per day, or TCE, PCE, or methylene chloride emissions do not exceed 0.5 pounds per day. BAAQMD Regulation § 8-47-109. Rule 47 is therefore an ARAR for systems that emit more than the designated amount of benzene, vinyl chloride, TCE, PCE or methylene chloride. Additionally, Section 8-47-301 does not apply to operations with total emissions of less than one pound per day of benzene, vinyl chloride, PCE, methylene chloride, and/or TCE, unless those emissions subsequently rise to over 1 pound per day. BAAQMD Regulation § 8-47-113.

Based on the subsurface concentrations and anticipated flow rates of these systems, it is not anticipated that any of the threshold emissions levels will be exceeded. This must be demonstrated during the design for each Active Sub-slab Depressurization and Sub-membrane Depressurization system. If the levels are exceeded, the substantive provisions of these rules will be relevant and appropriate.

BAAQMD Regulation 8, Rule 40 is potentially relevant and appropriate to activities during the construction phase of the selected remedy. Where more than 8 cubic yards of contaminated soil are removed for construction of a remedial system beneath buildings at the Site, and where the soil has organic content above 50 parts per million by weight (ppmw), Section 8-40-304 would require that inactive storage piles be appropriately covered. Thus, these requirements are ARARs where more than 8 cubic yards of contaminated soil are removed for remedy construction.

### ***To be Considereds (TBCs)***

Where there is not a regulatory standard for exposure to a chemical at a site, EPA may also set site-specific, risk-based cleanup levels that apply specifically to the contaminants and exposures at the site. The site-specific risk analysis can be based on multiple considerations, including chemical-specific ARARs and criteria found in “to be considered” guidance.

**EPA Regional Screening Levels (RSLs):** For this Site, EPA is using RSLs and site-specific information to determine appropriate risk-based indoor air cleanup levels. The indoor air RSLs for TCE are 1 µg/m<sup>3</sup> for residential occupancy and 6 µg/m<sup>3</sup> for commercial worker/non-residential occupancy. EPA derived these TCE indoor air cleanup levels using health-based screening level for long-term exposure to TCE. The CTS Printex indoor air cleanup levels are listed in Table 2.

## **14 Statutory Determinations**

Under CERCLA Section 121 and the National Contingency Plan (NCP), EPA must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ, as a principal element, treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes. The following sections discuss how the selected groundwater and vapor intrusion remedies meet these statutory requirements and preferences.

Once implemented, the groundwater and vapor intrusion remedies will protect human health of building occupants at the Site from actual or threatened releases of Site-related hazardous substances into the environment via ingestion of groundwater or the vapor intrusion pathway. Groundwater and indoor air cleanup levels have been established that are protective of public health and can be achieved over time upon implementation of the remedies. Both the groundwater and vapor intrusion remedies and, if necessary, the groundwater contingency remedy, will meet all applicable and relevant and appropriate requirements. Land use at the Site is expected to remain commercial/light industrial and residential, and not change as a result of the revised groundwater remedy and selected vapor intrusion remedy.

### **14.1 Groundwater Remedy**

#### **Protection of Human Health and the Environment**

The selected groundwater remedy, Alternative 3B, will protect human health and the environment through in situ treatment and monitored natural attenuation. The groundwater remedy is expected to achieve the remedial action objective of returning the contaminated groundwater to drinking water quality. Until this goal is achieved, or the contingency remedy is implemented, the established institutional controls – consisting of a recorded land use covenant and well permitting and installation standard requirements – will remain in place to ensure that there are no exposure pathways to contaminated groundwater at the Site. The implementation of the selected remedy will not pose unacceptable short-term risks.

#### **Compliance with Applicable or Relevant and Appropriate Requirements**

The selected remedy will comply with all ARARs identified for the Site, as described in Section 13.1, above. The MCLs for TCE and the other COCs are relevant and appropriate because the State of California has designated the groundwater at the Site to have a beneficial use as a drinking water source. The selected remedy is expected to achieve all ARARs within 15 years.

#### **Cost-Effectiveness**

In EPA's judgment, the Selected Remedy is cost-effective and best meets the balancing criteria used in the detailed analysis of alternatives: Long term effectiveness and permanence; Reduction in toxicity, mobility, and volume through treatment; and Short-term effectiveness. In making this determination, the following definition was used: "A remedy shall be cost effective if its costs are proportional to its overall effectiveness." (NCP §300.430(f)(1)(ii)(D)). The other remedial alternatives are more expensive, with limited benefit in risk reduction or require an unnecessary longer time frame to clean up the contaminated groundwater. The long-term

groundwater monitoring component of the selected remedy is necessary to comply with ARARs by enabling a future determination that MCLs have been achieved. The estimated present worth cost of the selected remedy is \$1.7 million<sup>9</sup>; if necessary, the estimated capital costs of implementing the contingency remedy will add \$118,000 to that total<sup>10</sup>.

### **Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable**

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. The reductions in the concentrations of the COCs achieved by this revision to the remedy are expected to be permanent and the remedy uses proven technologies used on other groundwater cleanups in the greater South Bay region. While the monitored natural attenuation component of the selected remedy is not a technology in itself, combining monitored natural attenuation with active treatment of the residual contaminant mass will meet the remediation objectives and offers the best balance of tradeoffs for the Site.

### **Preference for Treatment as a Principal Element**

The selected groundwater remedy includes active treatment by enhanced anaerobic bioremediation for the portion of the Site with the residual contaminant mass exceeding cleanup levels. Although monitored natural attenuation as applied to the other portions of the Site does not include active treatment, the principal element of the remedy is active treatment of the residual contaminant mass. Furthermore, the original remedy, which included treatment as a principal element, already reduced the extent of contaminated groundwater and reduced the contaminant concentrations at the Site. Therefore, choosing a remedy with active treatment for the area with residual contaminant mass and no active treatment in areas with lower contaminant concentrations is an appropriate remedy for this Site. If necessary, the contingency remedy, enhanced anaerobic bioremediation, will be implemented for those portions of Site north of Plymouth Street where MNA proves ineffective at achieving groundwater cleanup levels.

### **Five-Year Review Requirements**

NCP §300.430(f)(4)(ii) requires a five-year review if the remedial action results in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure. TCE concentrations, as well as concentrations for several other COCs, in the shallow groundwater are still above levels that allow for unlimited use and unrestricted exposure, and so a policy Five-Year Review requirement triggered by construction completion of the original remedial action will remain in place for the Site. Three Five-Year Reviews have been completed for the Site since the 1991 ROD was signed – in 1999, 2005, and 2010. The next Five-Year Review will be completed in 2015.

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<sup>9</sup> A detailed summary of the cost estimate for the selected groundwater remedy is provided in Appendix D.

<sup>10</sup> A detailed summary of the capital cost estimate for the contingency remedy is provided in Appendix F  
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## **14.2 Vapor Intrusion Remedy**

### **Protection of Human Health and the Environment**

The selected vapor intrusion remedy will protect human health and the environment by using a combination of engineering controls and ICs. Engineering controls to mitigate vapor intrusion were installed for the existing residential development south of Plymouth Street. ICs are in place to maintain the integrity and functionality of the installed engineering controls, as well as provide notification to EPA of future construction at the Site that could result in potential impact to indoor air by the vapor intrusion pathway. For future buildings, north of Plymouth Street, EPA's review and approval of new construction and implementation of engineering controls, if warranted, for the new construction, will keep the indoor air concentrations below cleanup levels.

ICs will be used for this remedy to protect human health by (1) ensuring the ongoing implementation of the remedy; (2) providing notice to owners and occupants of buildings overlying the shallow subsurface contamination about the remedy; and (3) providing notice to EPA and the Responsible Parties of changes in occupancy or construction. Using multiple lines of evidence, EPA has established vapor intrusion remedy requirements for new construction at the Site. Implementation of the vapor intrusion remedy will not pose any unacceptable short-term risks.

### **Compliance with Applicable or Relevant and Appropriate Requirements**

The selected vapor intrusion remedy will comply with all ARARs described in Section 13.2 of this ROD Amendment.

### **Cost-Effectiveness**

40 C.F.R. § 300.430(f)(ii)(D) requires EPA to determine the cost-effectiveness of the selected remedy by evaluating the cost of an alternative relative to its overall effectiveness. Effectiveness is defined by three of the criteria used in the detailed analysis of alternatives: long-term effectiveness, short-term effectiveness, and reduction of toxicity, mobility and volume through treatment. The overall effectiveness is then compared to cost to ensure that the selected remedy is cost-effective.

The estimated present worth cost for the selected remedy for new construction ranges from \$105,000 to \$134,000 depending on building type and size and whether multiple lines of evidence indicate that mitigation for the vapor intrusion pathway is warranted at the building location. As the indoor air quality of existing buildings is not impacted by vapor intrusion, the estimated present worth cost for the vapor intrusion remedy for existing buildings is associated with establishing the necessary ICs for informing property owners and establishing the ICs so that EPA is notified of future construction at the Site.

The selected remedy for future construction – a sub-slab/sub-membrane ventilation system – achieves the greatest degree of overall effectiveness and health protectiveness relative to cost. This remedy has a high ranking on long-term effectiveness and low present worth costs for the assumed building size than the active indoor air ventilation system alternative. Therefore, the vapor intrusion remedy is cost effective.



### **Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable**

EPA has determined that the selected vapor intrusion remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Treatment of the contaminants causing vapor intrusion will be accomplished by directly addressing the subsurface shallow groundwater contamination in accordance with the selected groundwater remedy. EPA has determined that the selected vapor intrusion remedy best meets the five balancing criteria (long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost), while also considering State and community acceptance.

The selected remedy satisfies the long-term effectiveness criterion for new construction by using multiple lines of evidence to determine what level of vapor intrusion mitigation is necessary to prevent the entry of Site chemicals of concern into the new construction (new building or modification of existing building) at levels exceeding indoor air cleanup levels for long-term exposure. The institutional controls selected will ensure that the remedy continues to be implemented appropriately at each property with respect to new construction at the Site.

### **Preference for Treatment as a Principal Element**

Treatment of the contaminants causing vapor intrusion is accomplished by remediating shallow groundwater contamination conducted in accordance with the selected groundwater remedy identified in this ROD Amendment.

The selected vapor intrusion remedy does not specifically satisfy the statutory preference for treatment as a principal element of the remedy. Unlike typical remedies to address contamination, remedies for vapor intrusion are not necessarily designed to reduce the toxicity, mobility, and volume through treatment of the Site contaminants, but rather to prevent exposure to these contaminants.

### **Five-Year Review Requirements**

The vapor intrusion remedy will result in hazardous substances remaining onsite above levels that allow for unlimited use and unrestricted exposure. Therefore, EPA will conduct a review of the vapor intrusion remedy at least once every five years as part of the review of the overall Site-wide remedy. The review will assess whether the vapor intrusion remedy continues to provide adequate protection of human health and the environment. If it is determined that the vapor intrusion remedy is no longer protective of human health and the environment, then modifications to the remedy will be evaluated and implemented as necessary.

## **15 Documentation of Significant Changes**

EPA issued its *Proposed Plan to Amend 1991 Cleanup Plan* for the CTS Printex Superfund Site on June 2, 2011. The *Proposed Plan* identified EPA's preferred alternative for a revised groundwater remedy and the preferred alternatives for the vapor intrusion remedy. No significant changes were made to the Proposed Plan. During the public comment period, EPA received comments that prompted only minor changes to the groundwater and vapor intrusion



remedies, as described in Section 12. These changes mainly pertain to the implementation details of the selected remedies and will be addressed as part of the remedial design for the selected remedies.

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## **PART 3 – RESPONSIVENESS SUMMARY**

**Responsiveness Summary**  
**EPA Responses to Public Comments on EPA's June 2011 Proposed Plan for the Groundwater and Vapor Intrusion Pathway**  
**CTS Printex Superfund Site**  
**Mountain View, CA**

PUBLIC COMMENT	EPA RESPONSE	COMMENT BY
<p>1 [T]his alternative [Alternative 3B] should be modified to clarify where a contingent remedy would be applied and where it would not be warranted.</p> <p>2 Alternative 3B should be modified to clarify that the contingent remedy would not be necessary in the area south of Plymouth Street and that MNA is the appropriate groundwater remedy for this area.</p>	<p>Having considered public comment and based on additional technical review, EPA has determined that a contingency remedy for groundwater is in fact warranted. EPA expects that EAB in the area of residual contaminant mass and MNA will reduce contaminant levels and, with time, meet cleanup levels. However, due to the complexity of the subsurface environment and variable concentration trends at select monitoring wells located north of Plymouth Street, EPA has selected EAB as a contingency measure in these areas that, if necessary, would be invoked through an ESD. In addition, ICs are in place to prevent groundwater use and exposure. EPA will evaluate the effectiveness of the remedy as part of its Five Year Review process.</p>	<p>Nancy T. Bice, Geosyntec, Consultant to Regis Homes.</p>
<p>3 Under the City of Mountain View's Community Development Department procedures for the MEW area (copy attached [to letter]), if an applicant proposes modifications to the building slab or foundation, any penetrations must be properly sealed. We believe this approach to be health protective without the automatic requirement to retrofit the existing building with a new sub-slab vapor control system, or to seek EPA approval.</p>	<p>EPA agrees that requirements to be incorporated into the City of Mountain View permitting and building procedures similar to those adopted for the MEW area would be sufficient to address slab or foundation modifications at the CTS Printex Site. As described in Sections 9.2 and 12.2 of the ROD, these procedures are part of the selected remedy for vapor intrusion.</p>	<p>Perry Palmer, Mountain View Commercial Owners</p>
<p>4 We suggest the following modification to the text on pages 7 and 8:</p>	<p>The implementation work plan for vapor intrusion mitigation will include EPA's review and assignment of an appropriate tier (see Table 7 of the ROD Amendment) for new construction. EPA will</p>	<p>Perry Palmer</p>

Part 3: Responsiveness Summary – CTS Printex Superfund Site, Mountain View, CA – September 2011

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<p><i>These procedures will include EPA approval of plans to ensure a vapor intrusion control system is part of new building construction. <b>Notice shall be provided to EPA of any modification of an existing building's slab or foundation. Such modifications shall be properly sealed.</b></i></p> <p>=+IA testing to ensure action levels are not exceeded.</p> <p>EPA of course always has the opportunity to require a retrofit of an existing building with a sub-slab vapor system where representative indoor air sample results exceed EPA standards.</p>	<p>establish construction details, a monitoring plan, and/or other requirements for vapor intrusion mitigation based on the multiple lines of evidence and the assigned tier. EPA will include the suggested modification as part of the Notification Requirements component of the Institutional Controls Implementation and Assurance Plan (ICIAP), which will be developed as part of the remedial design phase.</p>	
<p>5 Costs: We believe there is an inadvertent error in the Capital Cost for Alternative 2, Table 3. As written on Page 8. Alternative 2 (Monitoring and ICs), EPA is requiring the installation of vapor intrusion control systems for existing buildings where building slabs or foundations are modified. However, the capital cost for this requirement is not included in the table, which significantly understates the cost of the alternative. Installation constraints posed by an existing building, will likely cause the system to be active rather than passive, in order to be effective. As a result, the cost of an active system should equal or exceed the \$105,000 cost of a passive, system, and as such, should be included in the cost</p>	<p>EPA is not requiring vapor control systems for modifications of building slabs for existing buildings at the Site. For existing buildings at Areas C and D, as well as the parking lot (Area F) in Figure 4, Alternative 2 includes the requirement for monitoring to establish multiple lines of evidence to evaluate the potential for vapor intrusion at the time of new development and new construction. Based on the generated multiple lines of evidence, an appropriate tier (see Table 7) will be assigned to the new construction that may or may not include the need to implement EPA's Selected Remedy. If vapor intrusion mitigation is needed (i.e., Tier 1 in Table 9), the selected remedy – Passive Sub-slab Ventilation with Vapor Barrier – will be implemented. As the need for engineering controls cannot be determined yet for future construction, the costs identified for Alternative 2 are appropriate relative to the scope of the alternative. If mitigation is necessary,</p>	<p>Perry Palmer</p>

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analysis for Alternative 2.	costs as identified in Appendix B for an assumed building size and associated vapor intrusion mitigation would be applicable.	
<p>6 This section [Section 5.1, Vapor Intrusion] describes results from sub-slab samples collected in two buildings and states the following: "Sub-slab soil vapor concentrations between 2,900 and 8,500 ug/m<sup>3</sup> were found in the subsurface, and these levels exceed EPA's sub-slab regional screening levels of 61 ug/m<sup>3</sup>." EPA calculated the screening level for trichloroethene (TCE) of 61 ug/m<sup>3</sup>. Using this 'screening level' is not applicable for this Site:</p> <ul style="list-style-type: none"> <li>EPA's Remedial Investigation (RI) report for the Site states that "recent studies have shown that applying this default attenuation factor [of 0.1] is extremely conservative based on different attenuation factors observed in several case studies."</li> <li>EPA's concurrent sub-slab and indoor air sample data allow calculation of a site-specific attenuation factor. For each building where sub-slab and indoor air samples were collected (see Table 4-2, of the RI), attenuation factors can be calculated as follows [the tabulation provided in the letter, while not copied herein, listed attenuation factors of 0.0008 to 0.00019 for 1924</li> </ul>	<p>Response actions for the existing buildings at 1914 and 1924 Plymouth Street were based on indoor air concentrations. The need for future vapor intrusion mitigation at these two properties for new construction will be based on multiple lines of evidence collected at the time of new construction. Sub-slab samples provided another line of evidence to show the potential for vapor intrusion into the overlying areas.</p> <p>As identified in Table 8 of the ROD Amendment, the existing buildings in Areas C and D require no engineering remedy for the vapor intrusion pathway. For new construction, the selected remedy is Passive Sub-slab Ventilation with Vapor Barrier. If necessary, EPA may evaluate multiple lines of evidence collected at the time of development.</p>	<p>Elie H. Haddad,  Haley &amp; Aldrich,  Inc., Consultant to  CTS Corporation</p>

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<p>Plymouth Street and 0.00011 to 0.00019 for 1914 Plymouth Street]:</p> <ul style="list-style-type: none"> <li>• The table [attenuation factors listed] above uses the June 2010 sub-slab and indoor air samples. The RI indicates that the June sub-slab samples are reliable (when collecting sub-slab samples in March 2010, EPA observed leakage into the sub-slab soil gas).</li> <li>• The calculations above show attenuation factors ranging from 0.00008 to 0.00019. These attenuation factors are well within EPA's Vapor Intrusion Database Preliminary Evaluation of Attenuation Factors, which shows that sub-slab attenuation factors in the database have a range of over four orders of magnitude, with a median value of about 0.005 and an interquartile range of about an order of magnitude around the median.</li> <li>• By applying the most conservative site-specific attenuation factors calculated above (0.00019) to the proposed action level for TCE, the calculated soil gas screening level for TCE in the sub-slab samples is 31,000 <math>\mu\text{g}/\text{m}^3</math>.</li> </ul> <p>Since the sub-slab soil gas samples are substantially lower than the calculated screening levels above, Building C and D require no further</p>		



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action for the vapor intrusion pathway.		
<p>7 Section 3.0 of the Proposed Plan lists the chemicals of concern (COCs) identified in the 1991 Record of Decision (ROD), but then states that of these COCs, only TCE, 1,1,-DCE, cis-1,2-DCE, trans-1,2-DCE, and 1,1-DCA are measured above the maximum contaminant level (MCL). Cleanup measures implemented at the Site have reduced the footprint of the plume and reduced concentrations of several COCs to below the MCLs. Therefore, it would be appropriate for the (ROD) to update the COCs to list only those COCs currently above MCLs, and to add vinyl chloride (although currently below MCLs) as byproduct of the degradation of TCE.</p>	<p>The COCs identified in the 1991 Record of Decision have been revised (see Table 1) to reflect over 20 years of monitoring data. The revised list includes only those COCs currently above MCLs, as well as vinyl chloride, which, although currently below MCLs, is a byproduct of the degradation of TCE and may therefore be increasing in the groundwater as TCE degrades.</p>	<p>Elie H. Haddad</p>
<p>8 The Proposed Plan includes a contingency to apply enhanced anaerobic bioremediation in low concentration areas where the preferred remedy is monitored natural attenuation (MNA). Studies have been conducted by researchers showing that at low VOC concentrations, such as those found in the areas at the site where MNA is proposed, adding more electron donors to the subsurface will not accelerate the degradation rate.</p>	<p>See Response to Comment 1, above.</p>	<p>Elie H. Haddad</p>

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<p>9 In Section 7.2, the Proposed Plan states that “[r]estricted covenants would be negotiated between the property owners and the CTS Printex responsible parties, designating EPA as a third party beneficiary.” First, it is very difficult for the responsible parties to negotiate a restricted covenant on a property they do not own. Second, an existing ROD for the nearby MEW site, recently issued by EPA, does not include restrictive covenants as an institutional control; rather, it includes recorded agreements if a mitigation measure is necessary. Third, additional covenants (or recorded agreements) are not necessary at the Site because none of the properties have shown the potential for vapor intrusion above levels of concern [see also Comment 6 above].</p>	<p>An environmental restriction covenant would only be required on a property if EPA classifies new development as Tier 1 which would require installation of a vapor barrier and passive sub-slab ventilation system (see Table 8 of the ROD Amendment). The covenant would mainly address the operation, maintenance, and monitoring of the vapor barrier and sub-slab ventilation system.</p> <p>EPA only proposes pursuing this option if the circumstances demonstrate the need. As noted in the comment itself, the MEW Site constitutes a helpful model in some respects, but ultimately presents different facts and circumstances – and needs a different remedy – from this Site.</p>	<p>Elie H. Haddad</p>
<p>10 Page 8, Alternative 2, 2<sup>nd</sup> paragraph. The statement “[t]hese procedures will include EPA approval of plans to ensure a vapor intrusion control system is part of [...] where an existing building’s slab or foundation is modified” is unduly restrictive and not practical. For example, a vapor intrusion control system would not be needed if the slab is modified to retrofit a restroom, or install a conduit. Such as system may not be needed if the building slab is</p>	<p>See Response to Comment 3, above.</p>	<p>Elie H. Haddad</p>

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expanded.		
<p>11 The allowable levels of TCE in residential indoor air are not defined accurately. In 5.1 the results of the indoor and outdoor air sampling both commercial and residential buildings is given as not exceeding acceptable limits of 1.2 micrograms/cubic meter. The acceptable limit for TCE in residential spaces is 1.0 microgram/cubic meter with an active proposal to reduce the allowable level to 0.7 micrograms/cubic meter. Were the sampling results less than 1.0 micrograms/cubic meter? Were they less than 0.7 micrograms/cubic meter?</p>	<p>The indoor air action level used in the vapor intrusion Focused Feasibility Study was 1.2 micrograms per cubic meter (<math>1.2 \mu\text{g}/\text{m}^3</math>) for residential buildings and <math>6.1 \mu\text{g}/\text{m}^3</math> for commercial buildings. Indoor air concentrations for TCE on March 5, 2010 and March 11, 2010 at 1914 Plymouth Street (light industrial/commercial building) were <math>1.1 \mu\text{g}/\text{m}^3</math>, and below the <math>6.1 \mu\text{g}/\text{m}^3</math> action level for a commercial building. A subsequent indoor air sampling event for this building in June 2010 had TCE concentrations below <math>1 \mu\text{g}/\text{m}^3</math>, ranging from <math>0.41</math> to <math>0.94 \mu\text{g}/\text{m}^3</math> at 1914 Plymouth Street and non-detect (<math>&lt;0.27 \mu\text{g}/\text{m}^3</math>) to <math>0.67 \mu\text{g}/\text{m}^3</math> at 1924 Plymouth Street (ITSI, 2011. <i>Final Supplemental Remedial Investigations, CTS Printex Superfund Site, Mountain View, California</i>. May).</p> <p>For simplicity in the text of the Proposed Plan, these action levels were rounded down to the nearest whole number – that is, from <math>1.2</math> to <math>1 \mu\text{g}/\text{m}^3</math> for residential buildings and from <math>6.1</math> to <math>6 \mu\text{g}/\text{m}^3</math> for commercial buildings.</p>	Bob Moss
<p>12 Table 1 shows the indoor action level for TCE in commercial building to be 6 micrograms/cubic meter. The correct value should be 4 micrograms/cubic meter, apparently the Water Board allows 4.1 micrograms/cubic meter, not 6 micrograms/cubic meter which is excessive.</p>	<p>The actions levels (now cleanup levels) for indoor air are correct for this ROD Amendment. They are based on EPA's site-specific calculation of the risk levels that will be protective of human health, assuming long-term exposure to indoor air concentrations.</p>	Bob Moss
<p>13 While Alternative 4, vapor barrier, sub-slab</p>	<p>Details regarding implementation of the vapor intrusion</p>	Bob Moss

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<p>membrane and institutional controls (ICs) has many good features, it lacks definition and requirements for ongoing indoor air sampling and mechanisms for taking corrective action, such as converting a passive sub-slab ventilation system into an active system, nor does it define frequency and desired location of ongoing indoor air sampling in either the commercial or residential spaces. Frequency and minimum sampling period should be stated. The proposed response action for new commercial and residential buildings in Table 5 omits ongoing monitoring. That should be added.</p>	<p>mitigation for a Tier 1 building will be established during the remedial design phase of the remedy. Development of an implementation plan and a monitoring plan will be part of the remedial design process and will include details regarding monitoring requirements and implementation details. In addition, for new construction that is classified as Tier 1, a building-specific addendum to the implementation and monitoring plans will be prepared and subject to EPA's approval before the new construction will be allowed. This added step will make it possible for EPA to ensure the appropriate implementation and monitoring of vapor intrusion mitigation at new construction.</p>	
<p>14 Based on all of these factors, Alternative 3B should be modified to clarify that the contingent remedy would not be necessary in the area south of Plymouth Street and that MNA is the appropriate groundwater remedy for this area.</p>	<p>See Response to Comment 1, above.</p>	<p>Bob Moss</p>
<p>15 You've made some projections about this preferred method of [groundwater] remediation. Is that based on direct experience with that compound [TCE]? If you have tried this before, can you give me a feel for how many other times you've tried this method and what are the projections based upon? What was the chemistry behind what breaks it [TCE] up?</p>	<p>Two EPA-approved models (BIOCHLOR and REMChlor) were used to estimate the time frame for groundwater remediation. BIOCHLOR was used to model the time frame for monitored natural attenuation to achieve cleanup in areas where applied, with REMChlor used to check the BIOCHLOR time estimates and also to model the time frame for groundwater extraction to achieve cleanup.</p> <p>Reductive dechlorination is the chemical process responsible for</p>	<p>Mike Chin</p>

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	the transformation of TCE to harmless end products by enhanced anaerobic bioremediation. Reductive dechlorination occurs under reducing conditions similar to sulfate reduction, and results in the chlorine atoms on the chlorinated ethene, such as TCE, being replaced with hydrogen atoms. Complete reductive dechlorination of TCE results in the formation of ethene and chloride salts. This technology has been used for remediation of TCE-contaminated groundwater at other locations within Region 9 and at other sites in the United States.	
16 I thought you were at least requiring one indoor air sample after construction.	With respect to new construction, the remedy will require indoor air sampling subsequent to installation of a vapor barrier and passive sub-slab ventilation system. The sampling will be used to determine whether the passive system is sufficient to meet indoor air cleanup levels. A monitoring plan will be developed during remedial design to ensure protectiveness of the remedy.	Lenny Siegel
17 I would recommend some subsequent monitoring based upon the potential, say, for earthquakes creating cracks or someone drilling a hole in the floor.	EPA will consider other factors, such as earthquakes, that could affect the integrity of the building slab during development of the implementation and monitoring plans as part of remedial design. Also see the response to Comment 18, below.	Lenny Siegel
18 What – have you thought about monitoring if – if the indoor air monitoring shows exceedance of the action level, and you have to go active, put a fan on the system? Do you have a plan for ongoing operation maintenance, monitoring for an active system? If it goes active, do you have a contingency for how you would [monitor].	EPA will continue to confirm the effectiveness of the vapor intrusion systems; the selected remedy for vapor intrusion will include requirements for operating, maintenance, and monitoring plans. These plans may include details regarding monitoring frequency, and contingency requirements to be followed if indoor air monitoring shows that a COC concentration exceeds the indoor air cleanup level. EPA will continue to compare indoor	Lenny Siegel

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	air results to concurrent outdoor air results when sampling a building and take into account outdoor (background) ambient air levels.	
19 When you're using bioremediation, typically, over time the effectiveness drops off. So how do you monitor the effectiveness of the biological species system that you're using, and then what do you do?	The remedial design process will include an evaluation as to whether bioaugmentation is needed to ensure a sufficient population of the microorganisms responsible for TCE and 1,2-DCE degradation. The groundwater monitoring plan developed during the remedial design may include an assessment of the population and activity of the microorganisms responsible for the reductive dechlorination of TCE and other chlorinated ethenes.	Bob Moss
20 Would you consider bio-augmentation as they have in the other pilots?	See Response to Comment 19, above.	Lenny Siegel
21 What kind of circulation rates are you talking about?	Specific details regarding the circulation rate, chemical addition, bioaugmentation, and the arrangement of the extraction and injection wells for the recirculation system will be determined as part of the remedial design.	Alan Chin
22 CTS is the responsible party for the cost of this?	In connection with the 1991 ROD, EPA entered into enforceable agreements with two parties: CTS Printex and ADN Corporation/Nearon Enterprises (the former owner of the property on which CTS Printex operated). EPA will be pursuing a new enforceable agreement for implementation of this ROD Amendment and recovery of EPA costs. The final agreement will be available to the public.	Robert Nansen





## **Appendix B**

Appendix B to the Consent Decree

## **STATEMENT OF WORK**

# **Remedial Design/Remedial Action (RD/RA) For Groundwater and Vapor Intrusion**

CTS Printex, Inc. Superfund Site

Mountain View, California



EPA Region 9  
November 2013

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## Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CDPH	California Department of Public Health
CFR	Code of Federal Regulations
CQAP	Construction Quality Assurance Plan
CSI	Construction Specification Institute
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
HASP	Health and Safety Plan
O&M	Operation and Maintenance
OU	Operable Unit
QA/QC	Quality Assurance and Quality Control
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
RA	Remedial Action
RAOs	Remedial Action Objectives
RD	Remedial Design
RD/RA	Remedial Design and Remedial Action
RDI	Remedial Design Investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SAOU	Source Area Operable Unit
SAP	Sampling and Analysis Plan
SOW	Statement of Work
TCE	Trichloroethylene
VOC	Volatile Organic Compound

**STATEMENT OF WORK FOR  
REMEDIAL DESIGN AND REMEDIAL ACTION  
CTS Printex, Inc. Superfund Site**

## **1. INTRODUCTION**

### **1.1. Purpose**

This Statement of Work (SOW) sets forth those activities, collectively referred to as “Work,” to be performed by the Settling Defendants (Settling Defendants) pursuant to the consent decree between the United States and Settling Defendants, dated \_\_\_\_\_ (Consent Decree or CD), to design, construct, operate, maintain, monitor, and evaluate the remedial action described in the September 30, 2011, Record of Decision Amendment for the CTS Printex, Inc. Superfund Site (RODA). The Settling Defendants shall furnish all necessary and appropriate personnel, materials, and services needed for, or incidental to, performing and completing the Work.

Remedial design (RD) includes the development of plans and specifications, general provisions, and specific requirements necessary to implement the remedy selected in the ROD, including compliance with the performance standards defined in the RODA. Remedial Action (RA) includes construction and startup of the remedy and is defined in the CD to mean activities required to implement the ROD, excluding performance of the Remedial Design and operation and maintenance (O&M). O&M refers to most post-startup activities, including monitoring and evaluation of the remedy.

### **1.2. EPA Oversight and Review**

EPA will provide oversight of the Settling Defendants’ activities. EPA will review and approve deliverables in accordance with Section XI of the CD.

EPA will review deliverables to assess the likelihood that the Work will achieve the Remedial Action Objectives, Performance Standards, other ARARs, and other requirements set forth in the RODA, Consent Decree and this SOW. Notwithstanding any action by EPA, Settling Defendants remain fully responsible for satisfying the provisions and requirements of the RODA, the Consent Decree, and this SOW. Nothing in the Consent Decree, this SOW, EPA’s approval of the RD, RA, or any other submittal, shall be deemed to constitute a warranty or representation of any kind by EPA that full performance of the RD and RA will achieve the Performance Standards or other requirements. Settling Defendants’ compliance with submittals approved by EPA does not foreclose EPA from seeking additional work to achieve Performance Standards or other requirements of the RODA.

### **1.3. Communication with EPA and State Agency**

The primary EPA contact for activities to be conducted pursuant to this Statement of Work is the EPA Project Coordinator, Raymond Chavira, [chavira.raymond@epa.gov](mailto:chavira.raymond@epa.gov).

The alternate contact is Richard Hiatt, Chief of the California Site Cleanup Section 3, [hiatt.richard@epa.gov](mailto:hiatt.richard@epa.gov).

The State contact at the San Francisco Bay Regional Water Quality Control Board (“RWQCB”) is John Wolfenden, Section Leader, Toxics Clean up Division, [jwolfenden@waterboards.ca.gov](mailto:jwolfenden@waterboards.ca.gov).

## **1.4. Contractor Personnel and Qualifications**

As required in Section VI of the CD, and in accordance with the schedules included in Sections 8 and 9 of this SOW, Settling Defendants shall notify EPA and the State of the name, title, and qualifications of the Supervising Contractor that Settling Defendants propose to retain to perform the Work, and a copy of the proposed contractor’s Quality Management Plan (QMP). EPA will issue a notice of disapproval or an authorization to proceed regarding hiring of the proposed contractor.

## **1.5. Reporting to EPA**

### ***1.5.1. Bi-monthly Progress Report***

The Settling Defendants shall prepare and submit written bi-monthly progress reports regarding the Work, including both Groundwater and Vapor Intrusion activities, as required by Section X of the CD. If no new construction is being planned and implemented, Settling Defendants may have no updates regarding Vapor Intrusion activities and may so state in the Progress Report.

### ***1.5.2. Vapor Intrusion Field Activity Report***

If new construction is being planned or implemented, and fieldwork, sampling, construction and/or response action implementation activities are therefore underway, the Settling Defendants shall provide additional, weekly field activity reports by email describing progress, and issues or problems encountered for the fieldwork and other Work activities.

### ***1.5.3. Groundwater Monitoring Annual Report***

The Settling Defendants shall prepare and submit a Groundwater Monitoring Annual Report no later than March 15 of each year. The Groundwater Monitoring Annual Report shall provide information generated by routine groundwater monitoring conducted pursuant to the ROD and ROD amendment.

After EPA certification of completion of the Groundwater Remedial Action, the Groundwater Monitoring Annual Report shall include information generated by implementation of the Operation and Maintenance Plan and Performance Monitoring and Evaluation Plan described in Section 3.2.10 of this SOW.

### ***1.5.4. Vapor Intrusion Annual Report***

Vapor Intrusion (VI) Annual Reports shall conform to the format specifications approved by EPA in relevant Site-wide Plans and any EPA-approved updates. Each VI Annual Report shall include, but not be limited to, the following:



- (a) Description of the Vapor Intrusion Work and activities taken to comply with this SOW during the reporting period, including a general description of all activities conducted during the reporting period;
- (b) Work activities include, but are not limited to: fieldwork, sampling, data collection, reporting, community involvement and meetings, laboratory results, interim vapor intrusion mitigation measures, and remedial design and remedial action activities;
- (c) Summary of all results of sampling and monitoring data by building or property address, including sampling location maps and figures, and data summary tables;
- (d) Biannual re-assessment of the extent of the shallow zone groundwater contamination using the most recent shallow zone groundwater concentration data and other lines of evidence, as appropriate. Updated shallow aquifer zone TCE isoconcentration maps should be provided in the Annual Progress Report.
- (e) Interpretation or explanation of the data collected during that period, including summary table update of response action tiering status of all buildings;
- (f) Description of Vapor Intrusion Work planned for the next reporting period, with updated schedules that show overall Vapor Intrusion Work completed, Vapor Intrusion Work planned for the next reporting period, and the overall project schedule for Vapor Intrusion Work task completion;
- (g) Description of all issues/problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated delays; and
- (h) Recommendations, follow-up actions, and proposed schedules for work to address problems encountered.

Annual Reporting Period: January 1 – December 31. The Annual Vapor Intrusion Progress Report is due on March 15 of the following year.

#### ***1.5.5. Progress Meetings and Documentation of Critical Decisions***

The Settling Defendants shall consult with EPA during the design and construction process as set forth in Section XII of the CD. Any critical decisions made in meetings or conversations with EPA or State representatives shall be documented in writing by Settling Defendants and submitted to EPA and, if appropriate, the State, within five (5) days of the discussion. The submittal shall document the decision and the rationale for the decision.

#### ***1.5.6. Notification of Non-Compliance***

The Settling Defendants shall notify EPA of any non-compliance or potential non-compliance with Performance Standards.

### **1.6. Five Year Review Reports**

Upon EPA's written request, the Settling Defendants shall provide support information as requested for EPA's Five-Year Review Reports.

## **1.7. EPA Guidance and Reference Materials**

The Settling Defendants shall consider relevant guidance, directives, and policies issued by EPA for conducting RD/RA and the activities described herein. A list of selected guidance and reference material is in Section 10.

## **1.8. Modifications**

If EPA determines that modifications are necessary to achieve and maintain the Performance Standards specified in the RODA, EPA may require that such modifications be incorporated into the appropriate work plans developed pursuant to this SOW, as set forth in Section VI of the CD.

## **2. DESCRIPTION OF REMEDIAL ACTION – CTS PRINTEX SUPERFUND SITE**

The objectives of this remedial action, as described in the 2011 Record of Decision Amendment are to:

- Reduce levels of chemicals in groundwater and restore groundwater to its beneficial use as a potential drinking water source;
- Accelerate the reduction of vapor intrusion from Site COCs in shallow groundwater and soil gas to levels that are protective of current and future building occupants, such that the need for a vapor intrusion remedy would be minimized or no longer necessary; and
- Protect occupants of commercial and residential buildings at the Site by preventing subsurface Site contamination from migrating into indoor air above cleanup levels for long-term exposure.

### **2.1. Summary of Groundwater Remedy**

EPA selected Enhanced Anaerobic Bioremediation (EAB), MNA, ICs, and Monitoring to reduce remaining COCs in groundwater. As outlined in Table 5 of Section 12.1 of the RODA, the revised remedy replaced the original remedy (groundwater extraction and discharge) with:

- (a) Enhanced anaerobic bioremediation for the area with residual contaminant mass near Well 17W;
- (b) Monitored Natural Attenuation (MNA);
- (c) Institutional controls (ICs) to prevent the use of the contaminated groundwater at the Site and any interference with the remedial systems; and
- (d) Monitoring.

The element of work required to perform the groundwater remedy is described in Section 3 of this SOW. The institutional controls element of work is described in Section 5 of this SOW.

### **2.2. Summary of Vapor Intrusion Remedy**

The vapor intrusion remedy for existing buildings located south of Plymouth Street is described in Section 12.2 of the RODA and comprises of the installation of a Passive Sub-slab Ventilation with Vapor Barrier, ICs and Monitoring. In 2010, the ventilation system and vapor barrier were installed, and an Environmental Restriction Covenant was recorded. The remedy for existing buildings located north of Plymouth Street is the implementation of ICs consisting of planning, permitting, and building requirements to install appropriate engineering controls in future construction. For all future buildings, the engineered remedy is the installation of a vapor barrier and passive sub-slab ventilation system (which will be designed to allow a conversion to active ventilation, if necessary), monitoring, and ICs.

Since the 2011 ROD Amendment took effect, EPA has worked with the City of Mountain View to implement the ICs portion of the remedy for existing buildings.

The element of work required to perform the vapor intrusion remedy is described in Section 4 of this SOW. The institutional controls element of work is described in Section 5 of this SOW.

### **2.3. Third Party Involvement in the Remedy**

Coordination and/or written agreements may be needed with the City of Mountain View, the RWQCB, County of Santa Clara, and others to implement the remedy.

### **2.4. Performance Standards**

Settling Defendants shall implement the RD/RA to achieve Performance Standards. Performance Standards shall include the Applicable or Relevant and Appropriate Requirements (ARARs), cleanup standards, standards of control, quality criteria and other substantive requirements, criteria or limitations set forth below, and/or contained in any approved deliverable. The procedures to be implemented to demonstrate compliance with the Performance Standards shall be documented in the Performance Monitoring and Evaluation Plan for the Groundwater Remedy (Section 3.2.10) and the Site-wide Vapor Intrusion Operation, Maintenance, Monitoring, and Management Plan for the Vapor Intrusion Remedy (Section 4.2.3).

### **3. GROUNDWATER ELEMENT OF WORK**

The elements and components of Work to be performed under this SOW have been developed based on the Selected Remedy for the CTS Printex Superfund Site as presented in the ROD Amendment (EPA, 2011). The Elements and Components of Work associated with the Groundwater Remedy are outlined below and described in detail thereafter. These Elements and Components of Work shall be implemented as part of this SOW.

The Performance Standards are set forth in Section 2.4 of this SOW.

Settling Defendants shall submit plans, specifications, drawings, and other deliverables for EPA and State review. Major deliverables, and the recipients and format of the deliverables, are specified in Section 8. Information presented in a deliverable in color must be interpretable when reproduced in black and white.

Settling Defendants shall implement quality control procedures to ensure the quality of all reports and submittals to EPA and the State. These procedures shall include, but are not limited to, internal technical and editorial review; independent verification of all calculations used in the design; and documentation of all reviews, problems identified, and corrective actions taken.

As described in Section XI of the Consent Decree, EPA may approve, disapprove, or modify each deliverable consistent with the requirements of the RODA and the CD.

#### **3.1. Remedial Design Work Plan**

The Settling Defendants shall submit a Remedial Design Work Plan, in accordance with Sections VI and X of the CD. Settling Defendants shall submit a revised RD Work Plan if directed by EPA. Upon approval by EPA, Settling Defendants shall implement the RD Work Plan. The deliverables and schedule in the RD Work Plan approved by EPA shall become requirements of this SOW and the CD.

General Requirements of RD Work Plan:

- (a) Settling Defendants shall implement this element of work to achieve the cleanup goals specified in the RODA, Table 1.
- (b) Settling Defendants shall submit a Remedial Design Investigation Work Plan in support of the remedial design, to refine the extent of VOC contamination requiring remediation, select the most appropriate substrates, amendments, and complete the remedial design for this element of work. Settling Defendants shall conduct the additional sampling in accordance with the EPA-approved sampling plans.
- (c) Settling Defendants shall propose a schedule for preparing a Performance Monitoring and Evaluation Plan (PMEP). The PMEP will establish the methods for monitoring system performance and achievements, including process monitoring, progress of the remediation, compliance with ARARs, and the attainment of the clean-up goal. Process monitoring shall be used to ensure the appropriate application of the technology.

- (d) The Settling Defendants shall make best efforts to minimize the impact on the property owners and tenants at the properties affected, including such things as placing piping below grade and siting the aboveground treatment equipment in a location convenient for the commercial occupant.
- (e) The Settling Defendants shall propose a schedule for preparing a Sampling and Analysis Plan for Groundwater monitoring pursuant to Section 6.1 of this SOW.

### ***3.1.1. Brief Description of the Site.***

The RD Work Plan shall include a brief description of the CTS Printex Site, including the sources, nature, and extent of groundwater contamination; a description of the remedy; and geographic, hydrogeologic, ecological, cultural, or natural resource features relevant to the RD. A Site Quality Assurance Project Plan (QAPP) shall be developed as part of the Systematic Planning Process formerly known as the Data Quality Objective or DQO Process (section 3.1.8.1). The QAPP is needed for the Remedial Design Investigation (RDI) and PMEP (sections 3.2.1 and 3.2.2.2).

### ***3.1.2. Project Schedule***

The RD Work Plan shall include a schedule consistent with Section 8 of this SOW that provides dates for design deliverables and other critical path activities required during design of the remedy. The schedule shall include dates for all design and remedial action planning activities included in Section 8, including the following:

- (a) Progress Reports;
- (b) Health and Safety Plan (HASP);
- (c) Remedial Design Investigation and Treatability Study Work Plan;
- (d) Remedial Design Investigation and Treatability Study Report (if additional data or treatability studies are needed prior to, or during, design);
- (e) Institutional Controls Implementation and Assurance Plan (ICIAP);
- (f) Preliminary Design Report (30%);
- (g) Pre-final Design Report (95%);
- (h) Final Design Report (100%);
- (i) Performance Monitoring and Evaluation Plan;
- (j) Sampling and Analysis Plan for Groundwater Monitoring;
- (k) Operation and Maintenance Plan; and
- (l) Construction Quality Assurance Plan (CQAP).

The schedule shall include time for EPA and State review of written deliverables and for meetings with EPA representatives when appropriate.

**3.1.3. Roles and Responsibilities of Key Personnel and Organizations**

The RD Work Plan shall describe the roles and responsibilities of individuals and organizations involved in the RD effort, including major subcontractors.

**3.1.4. Treatment Technologies/Treatability Studies**

The RD Work Plan shall identify the technologies being considered for in situ bioremediation of groundwater, provide documentation that the technologies under consideration are capable of satisfying Performance Standards, and describe the need, if any, for pilot-scale or demonstration-scale treatability studies. If a treatability study is required, the RD Work Plan (or a separate Treatability Study Sampling and Analysis Plan) shall describe the following:

- (a) Technology to be tested;
- (b) Test objectives;
- (c) Data quality objectives;
- (d) Experimental or test procedures;
- (e) Planned performance measurements;
- (f) Analytical methods;
- (g) Data management and analysis procedures;
- (h) Health and safety requirements; and
- (i) Residual waste management handling and disposal.

The RD Work Plan shall also include a schedule for completion of testing and preparation of a report that evaluates the performance and implementability of the technology in relation to Performance Standards.

**3.1.5. RA Contracting and Implementation Strategy**

The RD Work Plan shall briefly describe the planned strategy for procuring the RA contractor and implementing the RA.

**3.1.6. Permits, Property Acquisition, Access, Approvals, Coordination, and Compliance with Substantive Requirements**

The RD Work Plan shall list all permits, property, leases, easements, access agreements, and approvals required for implementation of the remedy and summarize actions taken to date, if any.



**3.1.7. *Third Parties Necessary for Implementation of the Remedy and Use of Existing Facilities***

The RD Work Plan shall identify existing facilities (e.g., monitoring wells, pipelines, etc.) that may be used as part of the remedy, describe their planned use, and discuss their condition, expected life, and the potential for increased maintenance or reduced lifespan (compared to new facilities).

**3.1.8. *Remedial Design Investigation Work Plan***

The Settling Defendants shall submit, as part of the RD Work Plan, a RDI Work Plan, which shall include both a Quality Assurance Project Plan and a Field Sampling Plan. The RDI shall satisfy the following objectives:

- (a) Refine the area and depths targeted for in situ remediation in the RODA;
- (b) Refine the understanding of the hydrogeology of the targeted area, including the downgradient extent in shallow aquifer;
- (c) Provide data needed to determine the design criteria needed for bioremediation;
- (d) Provide data upon which the MNA design will be based; and
- (e) Provide any other data needed to address data gaps and verify that critical design assumptions remain valid

The RDI shall include the installation of one or more groundwater monitoring wells located near the downgradient end of the target area (see Figures 2 and 3 in the RODA), measurement of water levels from new and existing wells, and the collection and analysis of samples from new and existing groundwater wells.

Settling Defendants shall install groundwater monitoring wells required for compliance monitoring during a second phase of the RDI.

**3.1.8.1. *Quality Assurance Project Plan***

The QAPP shall include the systematic planning or DQO development process and be prepared consistent with the applicable guidance found in Section 10 of this SOW. The QAPP shall address all QA/QC requirements for the sampling efforts to which it applies and shall cover sample analysis and data handling for all samples collected. The QAPP shall be consistent with the requirements of the EPA Contract Lab Program (CLP) for laboratories proposed outside the CLP. The QAPP shall include the following elements:

- (a) Project Description, including facility location history, past data collection activity relevant to the current sampling effort;
- (b) Project organization and responsibility;
- (c) Seven step Data Quality Objectives process;

- (d) Quality assurance objective for measurement data, including level of quality control effort, accuracy, precision and sensitivity of analysis, completeness, representativeness, and comparability;
- (e) Sample custody, including field specific custody procedures and laboratory chain of custody procedures;
- (f) Calibration procedures and frequency, including field instruments/equipment and laboratory instruments;
- (g) Analytical procedures, including non-Contract Laboratory Program, analytical methods, field screening and analytical protocol, and laboratory procedures;
- (h) Internal Quality Control Checks, including Field Measurements and Laboratory Analysis;
- (i) Data Reduction, Validation, and Reporting, including Data Reduction, Data Validation, and Data Reporting;
- (j) Performance and System Audits, including Internal Audits of Field Activity, Internal Laboratory Audit, External Field Audit, and External Laboratory Audit;
- (k) Preventive Maintenance, including Routine Preventative Maintenance Procedures and Schedules, Field Instruments/Equipment, and Laboratory Instruments; and
- (l) Specific Routine Procedures to Assess Data Precision, Accuracy, and Completeness, including Field Measurement Data and Laboratory Data.

#### **3.1.8.2. *Field Sampling Plan for Remedial Design Investigation***

The Settling Defendants shall submit a Field Sampling Plan for the RDI in accordance with the approved RD Work Plan.

The Field Sampling Plan (FSP) shall supplement the QAPP and address all sample collection activities. The FSP shall be developed in accordance with all applicable guidance and policy (see Section 10 of this SOW). The FSP shall be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. The FSP shall describe:

- (a) Sampling objectives;
- (b) Analytical parameters, analytical methods, and holding times;
- (c) Sampling locations and frequencies, sampling procedures and equipment;
- (d) Sample preservation, sample packing, QA/QC samples;
- (e) Sample paperwork and chain-of-custody procedures, sample handling and shipping,
- (f) Management of investigation-derived wastes;
- (g) Planned uses of the data;

- (h) The sampling and data collection methods that will be used; and
- (i) The schedule that describes activities that must be completed in advance of sampling, including acquisition of property, access agreements, and arrangements for disposal of investigation-derived waste.

#### **3.1.8.3. *Health and Safety Plan for Remedial Design Investigation***

Concurrently with submittal of the RDI Work Plan, the Settling Defendants shall submit a Health and Safety Plan for the RDI, in accordance with the approved RD Work Plan.

### **3.2. Groundwater Remedial Design**

Remedial Design activities shall include the preparation of clear and comprehensive design documents, construction plans and specifications, and other design activities needed to implement the Work and satisfy all Performance Standards and other requirements. All plans and specifications shall be developed in accordance with EPA's Superfund Remedial Design/Remedial Action Handbook (EPA 540/R-95/059), and in accordance with the schedule set forth in Section 8 of this SOW.

#### **3.2.1. *RDI Report***

The Settling Defendants shall conduct the RDI in accordance with an approved RDI Work Plan and the schedule in the approved RD Work Plan. The Settling Defendants shall submit a RDI Report in accordance with an approved Field Sampling Plan and QAPP. The RDI Report shall include well construction information. This RDI Report could be combined with the Preliminary Design Report.

#### **3.2.2. *Preliminary Design (30%)***

The Settling Defendants shall conduct Preliminary Design activities in accordance with the approved RD Work Plan. The Preliminary Design submittal shall include the following:

- (a) A detailed Design Basis Report that presents and justifies the concepts, preliminary assumptions, design criteria, performance standards, other requirements, and preliminary interpretations and calculations used in the design, including, as appropriate;
- (b) Updates to information provided in the RD Work Plan;
- (c) A description of the targeted area of contamination, including a summary of geologic, water quality, or other data used to delineate the area and an explanation of how remedial action requirements will be met by the planned remediation system;
- (d) Siting criteria for extraction/injection wells, recirculation system, pipelines, and other facilities;
- (e) The results of any treatability studies, additional field sampling and pre-design work;
- (f) Assumed influent quality over the design life of the treatment system, with a description of the methodology used to develop the estimate;

- (g) Other treatment requirements in addition to removal of COCs;
- (h) A description of waste streams, including approximate rates or volumes to be generated;
- (i) Substrates, nutrient, bioaugmentation requirements, and other design criteria;
- (j) The planned level of operator oversight;
- (k) A description of the system control strategy, including a discussion of how the system is designed to respond to seismic events, power outages, equipment failure, and operator error;
- (l) An outline of specifications to be used; and
- (m) Preliminary plans and drawings of treatment, recirculation/conveyance, and monitoring systems, including a mass balance and process flow diagram, and a preliminary construction schedule.

### **3.2.3. Pre-final Design (95%)**

Settling Defendants shall submit the Pre-final Design when the design effort is approximately 95% complete in accordance with Section X of the CD and the approved RD Work Plan. The Pre-final Design shall fully address all comments made to the preceding design submittal, and be submitted along with a memorandum indicating how the comments were incorporated into the Pre-final Design. The Pre-final Design shall function as the draft version of the Final Design (100%).

The Pre-final Design shall include an updated schedule for the construction and implementation of the Remedial Action (including startup procedures, startup testing, and any anticipated compliance testing) through satisfaction of “Operational and Functional” criteria; a capital and O&M cost estimate; and a complete set of reproducible construction specifications and drawings that conform to CSI format suitable for bid advertisement. The drawings shall include an outline or list of drawings, a process flow diagram, a piping and instrumentation diagram with a control logic table, and engineering drawings for all components of the project. This includes, but is not limited to, all necessary civil, piping, electrical, structural, mechanical, instrumentation and control drawings for the extraction wells and wellheads, conveyance systems, treatment processes, and monitoring systems. In addition, the Pre-final Design shall include the following:

- (a) A description of the targeted area of contamination, including a summary of geologic, water quality, or other data used to delineate the area and an explanation of how remedial action requirements will be met by the planned remediation system;
- (b) Siting criteria for extraction/injection wells, recirculation system, pipelines, and other facilities;
- (c) The results of any treatability studies, additional field sampling and pre-design work;
- (d) Assumed influent quality over the design life of the treatment system, with a description of the methodology used to develop the estimate;

- (e) Other treatment requirements in addition to removal of COCs;
- (f) A description of waste streams, including approximate rates or volumes to be generated;
- (g) Substrates, nutrient, bioaugmentation requirements, and other design criteria;
- (h) The planned level of operator oversight;
- (i) A description of the system control strategy, including a discussion of how the system is designed to respond to seismic events, power outages, equipment failure, and operator error;
- (j) Operation and Maintenance Plan;
- (k) Performance Monitoring and Evaluation Plan; and
- (l) Construction Quality Assurance Plan.

The required elements of the Operation and Maintenance Plan, Performance Monitoring and Evaluation Plan, and Construction Quality Assurance Plan are set forth below.

#### **3.2.3.1. *Operation and Maintenance Plan***

The Settling Defendants shall prepare an Operation and Maintenance Plan (O&M Plan) pursuant to Sections VI and X of the CD that describes operation, troubleshooting, training, maintenance, and evaluation activities. Settling Defendants shall amend the O&M Plan as necessary over the life of the remedy.

The O&M Plan shall describe long-term operation and maintenance of the Site's groundwater facilities. The O&M Plan shall include the following elements:

- (a) Description of and schedule for each operation task and maintenance task;
- (b) Description of and schedule for periodic inspections of equipment and components;
- (c) Description of instrumentation and equipment monitoring;
- (d) Description of material and maintenance needs, and anticipated equipment replacement for significant components;
- (e) Example checklists and descriptions of periodic reports;
- (f) Health and Safety Requirements, including, descriptions of precautions, necessary equipment, etc., for site personnel, and safety tasks required in event of systems failure;
  - i. Description and analysis of potential operating problems, including common and/or anticipated remedies;
  - ii. Description of routine monitoring, data collection and laboratory testing, schedule and procedures for monitoring, anticipated interpretation of the data;
  - iii. An FSP and QAPP for any field sampling required as part of the routine monitoring, data collection and laboratory testing. The required components of an

- FSP and QAPP are described in Sections 6.1 and 3.1.8.1 of the SOW, respectively;
- iv. Description of monitoring equipment and monitoring components, including identifying information, maintenance requirements and schedule, and replacement requirements and schedule;
  - v. Description of alternative operations and maintenance in case of systems failure, including:
    - alternative procedures to prevent release or threatened releases of Waste Material which may endanger public health and the environment or exceed Performance Standards;
    - analysis of vulnerability and additional resource requirements should a failure occur; and
    - Notification and reporting requirements should O&M systems fail or be in danger of imminent failure;
  - vi. Procedures for modifications to the O&M Plan, including:
  - vii. description of procedures for making modifications to the O&M Plan; and
  - viii. Notification and distribution requirements for modifications to the O&M Plan;
  - ix. Description of corrective action to be implemented in the event that cleanup or performance standards are exceeded; and a Schedule for implementing these corrective actions;
  - x. Description of records and reports, including daily operating logs, laboratory records, reports regarding emergencies, personnel and maintenance records; and monthly and annual reports to State agencies.
  - xi. A summary of O&M staffing needs, including training and certification requirements;
  - xii. A description of routine data collection and analysis activities required for O&M and to determine if Performance Standards related to O&M are being met, including:
  - xiii. Flow rates and volume of groundwater treated to estimate contaminant mass removed;
  - xiv. Water quality to detect any conditions that may interfere with the proper operation and function of the remedy, and to anticipate conditions that may require modifications to the treatment system (Water quality sampling and analysis at groundwater monitoring wells within the treatment zone are addressed in the Compliance Monitoring Plan.);
  - xv. A description of planned routine reporting to EPA required by Section 1.5 of this SOW;
  - xvi. Provision for development of a Health and Safety Plan for O&M;
  - xvii. Description and analysis of potential operating problems (e.g., decline in groundwater elevation, higher than expected VOC concentrations) and potential control strategies or corrective actions (e.g., additional monitoring, operational modifications, project shutdown, and/or additional design and construction activities);
  - xviii. A description of the plans for the proper disposal of materials used and wastes generated during the O&M periods in compliance with Section VI of the CD;

- xix. Provisions for submittal of a SAP or addendum to an existing SAP to address data collection related to O&M; and
- xx. Procedures for notification to EPA and the State within 72 hours after receipt of information indicating noncompliance or potential noncompliance with Performance Standards related to O&M.

### **3.2.3.2. Performance Monitoring and Evaluation Plan**

Settling Defendants shall submit a PMEP to provide for data collection and analysis activities needed to demonstrate that the Work satisfies all Performance-Standards related to the remedy. The PMEP shall be submitted during the design period as specified in the approved RD Work Plan, and implemented after EPA approval. The PMEP shall be amended as necessary over the life of the remedy.

The PMEP shall, at a minimum, include or accomplish the following:

- (a) Identify Performance Standards that must be satisfied by the remedy.
- (b) Describe the types of data to be collected, sampling and data gathering methods, monitoring locations, sampling and measurement frequencies, and if appropriate, minimum monitoring duration. The data shall include water quality measurements in one or more depths in groundwater compliance wells downgradient of the treatment zone. The compliance wells shall be one or more new or existing multi-level monitoring wells (or well clusters) located downgradient of the treatment area and to satisfy the MNA requirements of the remedy. Compliance well screens shall be designed to minimize the dilution of groundwater samples and be sufficient in number and adequately located to verify that groundwater moving from the Target Area is intercepted by the monitoring wells. Each multi-level compliance well or well cluster shall allow the collection of samples from multiple depths in the contaminated portion of the aquifer. The wells shall be located and designed, and the data analyzed, to evaluate whether the remedy is effective, and to support recommendations for changes in the design if warranted.
- (c) Include upgradient groundwater monitoring within the treatment zone to provide early warning of conditions that may require changes in remedy operation. The PMEP shall identify the specific existing (or new) multi-level monitoring wells (or well clusters) located within and upgradient to the predicted treatment zone that will be monitored. The early warning monitoring shall include the collection of samples from multiple depths in the contaminated portion of the aquifer.
- (d) Describe how performance data shall be analyzed, interpreted, and reported to EPA to determine compliance with Performance Standards and provide early warning of conditions that may require changes in remedy operation. Claims of change, difference, or trend in water quality shall include the use of appropriate statistical concepts and tests.
- (e) A description of the procedures for reporting compliance monitoring information to EPA and the State in the progress and annual reporting required by Section 1.5 of the SOW.



- (f) Provisions for submittal of a Sampling and Analysis Plan and Health and Safety Plan, or addendums to existing plans.
- (g) A schedule for the performance of sampling and data gathering activities
- (h) Procedures for notification to EPA and the State within 72 hours after receipt of information indicating noncompliance or potential noncompliance with Performance Standards

### **3.2.3.3. Construction Quality Assurance Plan**

Settling Defendants shall submit for EPA review a CQAP, which shall detail the quality assurance program during construction activities, to ensure that the completed project meets or exceeds all design criteria, plans, and specifications. The CQAP shall address sampling, analysis, and monitoring to be performed during the remedial construction phase of the Work. Quality assurance items to be addressed include, at a minimum, the following:

- (a) Identification of a quality assurance official (QA Official) independent of the RA Contractor to conduct a quality assurance program during the remedial action phase of the project;
- (b) Qualifications of the Quality Assurance Official to demonstrate he or she possesses the training and experience necessary to fulfill his or her identified responsibilities;
- (c) Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the RA;
- (d) Specific construction quality assurance systems (e. g., USACE) to be used, if any;
- (e) Monitoring, measurement, sampling, testing and daily logging to establish whether the RA construction is performed in compliance with design specifications, ARARs, and performance standards. This shall include identification of the sample size, locations, frequency of testing, acceptance and rejection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation;
- (f) Protocols for monitoring, measurement, sampling and testing;
- (g) Inspection and certification of the Work;
- (h) A detailed description of reporting requirements for CQA activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation;
- (i) Description of the provisions for final storage of all records consistent with the requirements of the CD;
- (j) Responsibility and authority of all organizations and key personnel involved in the remedial action construction (including contractors, subcontractors, and consultants);

- (k) A description of the quality control organization, including a chart showing lines of authority, responsibilities and qualifications, and documentation that the QA team is independent of the construction contractor;
- (l) A description of the observations, inspections, and testing that will be used to assure quality workmanship, verify compliance with the plans and specifications, and verify compliance with health and safety procedures during implementation of the Remedial Action. The Plan shall include documentation of the qualifications of the laboratories performing the testing;
- (m) Reporting procedures, frequency, and format for CQA activities.

The CQAP must be approved by EPA prior to the initiation of construction.

#### ***3.2.3.4. Construction Health and Safety Plan***

Settling Defendants shall prepare a Construction Health and Safety Plan in compliance with U.S. Occupational Safety and Health Administration requirements in Title 29 of the Code of Federal Regulations (CFR), sections 1910 and 1926, and any other applicable requirement(s). The Construction Health and Safety Plan shall specify how workers will be protected during site activities through the identification, evaluation, and control of health and safety hazards.

EPA will review but neither approve nor disapprove Settling Defendants' Construction Health and Safety Plan.

#### ***3.2.4. Final Design (100%)***

The Final Design shall fully address all comments made on the Pre-final Design and be submitted with a memorandum indicating how the comments were addressed in the Final Design. The Final Design shall be certified by a Professional Engineer registered in the State of California.

### **3.3. Groundwater Remedial Action**

#### ***3.3.1. Remedial Action Work Plan***

The Settling Defendants shall submit a Remedial Action Work Plan in accordance with Section VI of the Consent Decree. Settling Defendants shall submit a revised RA Work Plan if directed by EPA. Upon approval, Settling Defendants shall implement the RA Work Plan. The deliverables and schedule in the EPA-approved RA Work Plan shall become requirements of this SOW and the CD. The RA Work Plan shall update the RD Work Plan and include the following elements:

- (a) Schedule for completion of the Remedial Action, including all Remedial Action tasks identified in the final design submittal, and for developing and submitting other required plans;
- (b) Designation of Settling Defendants' on-site Remedial Action Coordinator, Construction Manager, Construction Contractor, Construction Quality Assurance personnel, Resident

Engineer and other key project management personnel along with lines of authority and descriptions of duties;

- (c) Groundwater monitoring plan;
- (d) Plan for EPA and State review and EPA approval of significant changes during construction;
- (e) Methodology for implementing the Operation and Maintenance Plan and satisfying permitting requirements, including identification of any outstanding issues regarding property acquisition, regulatory agency approvals, access or use agreements, easements, third party agreements, permitting requirements, or substantive requirements for onsite activities;
- (f) Plan to provide site security;
- (g) Methodology for implementing the PMEP and CQAP;
- (h) Procedures and plans for the decontamination of equipment and the disposal of contaminated materials; and
- (i) Any changes in procurement or contracting strategy, including any concerns about contractor or equipment availability.

Significant field changes to the Remedial Action as set forth in the RA Work Plan and Final Design shall not be undertaken without the approval of EPA.

### ***3.3.2. Construction Contractor***

Settling Defendants shall notify EPA and the State of the selected construction contractor in accordance with the approved RA Work Plan.

### ***3.3.3. Pre-Construction Meeting***

A preconstruction meeting shall be held after selection of the construction contractor but before initiation of construction. The meeting shall include the Settling Defendants' representatives and interested federal, state and local government agency personnel, and shall define the roles, relationships, and responsibilities of all parties; review work area security and safety protocols; review any access issues; review the construction schedule; and review construction quality assurance procedures. The Settling Defendants shall ensure that the results of the preconstruction meeting are documented and transmitted to all parties in attendance, including the names of people in attendance, issues discussed, clarifications made, and instructions issued.

### ***3.3.4. Remedial Action Construction***

The Settling Defendants shall implement the Remedial Action as detailed in the approved Final Design and approved RA Work Plan.

### ***3.3.5. Pre-certification Inspection and Remedial Action Report***

Within 90 days after Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been achieved, Settling Defendants shall

schedule and conduct a pre-certification inspection to be attended by Settling Defendants and EPA representatives.

If, after the pre-certification inspection, Settling Defendants still believe that the Remedial Action has been fully performed and the Performance Standards have been achieved, they shall submit a draft Remedial Action (RA) Report requesting EPA Certification of Completion of the Remedial Action. The RA Report shall demonstrate that the Remedial Action satisfies the requirements of the CD, is operating and functioning as intended, and shall be prepared in accordance with EPA OSWER Publication 9355.0-39F (June 1992). It shall include:

- (a) A narrative description of the construction;
- (b) A chronology of events;
- (c) The results of operational and compliance monitoring completed to date;
- (d) A determination whether performance standards and other relevant requirements have been met, and the basis for the determination;
- (e) A summary of the findings of the Pre-Certification Inspection(s);
- (f) Documentation to substantiate the Settling Defendants' certification of full satisfaction with Sections XIV of the CD;
- (g) Documentation that the construction quality assurance quality control plan was implemented and that construction completion is consistent with the ROD and remedial design plans and specifications; and
- (h) An electronic copy of the as-built drawings, signed and stamped by a professional engineer, on a CD or DVD.

The RA Report shall also contain the following statement, signed by a responsible corporate official of the Settling Defendants or the Settling Defendants' Project Coordinator:

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

After completion of the pre-certification inspection and receipt and review of the draft Remedial Action Report, EPA may provide a Certification of Completion of the Remedial Action, or notify Settling Defendants in writing of the activities that must be undertaken to complete the Remedial Action.

Alternatively, after the pre-certification inspection, Settling Defendants may submit a written report that outlines outstanding construction items, actions required to resolve the outstanding items, completion dates, and a proposed date for another pre-certification inspection.

## **4. VAPOR INTRUSION ELEMENT OF WORK**

Elements and components of Work to be performed under this SOW have been developed based on the Selected Remedy for the CTS Printex Superfund Site as presented in the ROD Amendment (EPA, 2011). The elements and components of Work associated with the Vapor Intrusion Remedy are outlined below and described in detail thereafter. These elements and components of Work shall be implemented as part of this SOW.

The Performance Standards are set forth in Section 2.4 of this SOW.

The vapor intrusion remedy applies to buildings and properties within the CTS Printex Site described in Figure 4, Section 12.2 of the RODA (EPA, 2011), and determination of the necessary response action is to be implemented on a building-by-building or property-by-property basis. This SOW applies to Site-wide vapor intrusion work and Building-specific work (“the Vapor Intrusion Work”).

The Settling Defendants shall cooperate with EPA in providing information to the public regarding the Vapor Intrusion Work. As requested by EPA, the Settling Defendants shall participate in the preparation of information for distribution and presentation to the public. In addition, as requested by EPA, Settling Defendants shall participate in public meetings, which may be held or sponsored by EPA, or in which EPA is a participant, to explain activities relating to the Vapor Intrusion Work.

Access required for the Vapor Intrusion Work shall be obtained in the manner prescribed by the Consent Decree (Section #####). All deliverables pertaining to Vapor Intrusion Work for actions requiring access shall include estimated expected timeframes to obtain access.

As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Vapor Intrusion Work conducted entirely on-site but all actions must comply with substantive requirements. However, certain elements of the Vapor Intrusion Work may require a state or local permit or approval, because the activities involved serve purposes other than solely for the vapor intrusion remedy. Where any portion of the Vapor Intrusion Work requires a state or local permit or approval, the Settling Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. For any delay in the performance of the Vapor Intrusion Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval, Settling Defendants may seek relief under the provisions of CD Section XVIII (Force Majeure), provided that they have submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals.

### **4.1. General Description of Work**

The Settling Defendants shall submit the following deliverables for the Vapor Intrusion Work necessary for implementation of the vapor intrusion remedy.

A summary of deliverables and response action activities is provided in Section 9, Table 6, of this SOW.

### **Building-Specific Plans for Sampling, Data Collection and Response Action Tiering**

- Site-wide Vapor Intrusion Sampling and Analysis Work Plan (*for Response Action Tiering*)
- Building-Specific Vapor Intrusion Sampling and Analysis Work Plans (future buildings)
- Building-Specific Vapor Intrusion Sampling and Evaluation Reports (future buildings)

### **Site-wide Vapor Intrusion Operations, Maintenance, Monitoring, and Management**

- Site-Wide Vapor Intrusion Operations, Maintenance, Monitoring, and Management Plan (includes Long-term Operations, Maintenance and Monitoring *for Area A Buildings* and Long-term Monitoring and Management *for Area C, D and F Buildings*)
- Site-wide Vapor Intrusion Institutional Controls Implementation, Management, and Monitoring Plan (see Section 5)

### **Vapor Intrusion Remedial Design for Future Buildings**

- Building-Specific Vapor Intrusion Control System Remedial Design
- Building-Specific Operations, Maintenance and Monitoring Plan (*for Tier 1 Buildings*)
- Building-Specific Monitoring and Management Plan (*for Area C, D and F Buildings*)

### **Vapor Intrusion Remedial Action for Future Buildings**

- Building-Specific Vapor Intrusion Response Action Implementation
- Building-Specific Vapor Intrusion Response Action Implementation Report

### **Site-wide Vapor Intrusion Remedial Action Completion Report**

## **4.2. Deliverables and Tasks – Vapor Intrusion Element of Work**

### **4.2.1. Site-wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering**

To determine the appropriate response action tier for all buildings and properties proposed for new construction or development within the Site, Settling Defendants shall submit a Site-wide Vapor Intrusion Sampling and Analysis Work Plan.

The Site-wide Vapor Intrusion Sampling and Analysis Work Plan shall include, but is not limited to the following:

- (a) For all existing non-residential buildings, within the Site, indicate the sampling status, and current use and occupancy, where known;



- (b) For all existing residential buildings within Site, that have been sampled and/or have a vapor intrusion remedy in place, indicate the current Tier and whether any additional sampling is necessary to determine or change response action tier;
- (c) For residential buildings and properties within the Site where sampling has not been conducted or where the buildings have not been tiered and where the property owner requests that the building be sampled, indicate the process for conducting the sampling, response action tiering, and data reporting for that building in the appropriate report(s);
- (d) For each non-residential building that has been sampled, indicate the response action tier designation if determined;
- (e) Project team organization, roles, responsibilities, and contact information;
- (f) Data quality objectives;
- (g) Sampling design and strategies for sampling multiple lines of evidence to determine response action tier, and how additional data collection may result in change of tier designation;
- (h) Methods for evaluating current indoor air ventilation system (e.g., HVAC) operations, conducting building and property surveys, identifying potential pathways for vapor intrusion and proposed sample locations;
- (i) Laboratory and field methodologies and analytical methods to be utilized;
- (j) Methodologies proposed to aid in determining whether the indoor air contaminant concentrations are attributable to subsurface Site contamination or other sources, such as consumer products or outdoor background air sources;
- (k) Description of presumptive interim vapor intrusion mitigation measures that may be taken if sampling or other conditions indicate such measures are necessary and will be consistent with future response actions to be taken and reporting process after those measures have been taken;
- (l) Description of process to obtain approval of interim vapor intrusion mitigation measures that have not been identified as presumptive interim vapor intrusion mitigation measures;
- (m) Description of access requirements for the work to be performed, existing access conditions, and expected additional tasks necessary and scheduled to obtain access;
- (n) Data Management and Reporting Plan including:
  - i. discussion of how historical data and future data will be organized, managed, and reported;
  - ii. description of graphical presentation of relevant data by building and property, including analytical sampling data, quality assurance/quality control data, and multiple lines of evidence information;
  - iii. description of reporting format for reports and distribution list of electronic and hardcopy submittals to EPA, the building owners, and the public; and

- iv. description of types of information that will be posted and regularly updated on a publicly available website; and
- (o) Work schedule, including, sampling activities, submittal of the Building-Specific Vapor Intrusion Sampling and Analysis Work Plans, and associated tasks.

#### ***4.2.2. Building-Specific Vapor Intrusion Plans***

Any planned new construction within the Site may require Building-Specific Vapor Intrusion work. Within 45 days of receiving written notification from EPA that new construction or a major building modification is planned at the Site, Settling Defendants must undertake the Building-Specific work detailed below.

##### **Building-Specific Vapor Intrusion Sampling and Analysis Work Plan**

A separate Building-Specific Vapor Intrusion Sampling and Analysis Work Plan or Addendum is required for additional data collection efforts to determine the response action tier for any new buildings within the Site.

The Building-Specific Vapor Intrusion Sampling and Analysis Work Plan for each building and property to be sampled shall include, but is not limited to, the following:

- (a) Property survey results on chemical use, operations, and current and historical facility and property information;
- (b) Relevant historical subsurface conditions and features, including potential pathways for subsurface vapor intrusion;
- (c) Proposed building conditions, occupancy and use conditions; summary of relevant previous data collected at and near the property (e.g., groundwater, soil gas, sub-slab soil gas, crawlspace, pathway samples);
- (d) Lines of evidence and specific data to be collected to determine response action tier or to move from one tier to another;
- (e) Proposed Building layout and proposed sampling locations;
- (f) Sampling method(s) and sampling duration;
- (g) Description of access requirements for the Vapor Intrusion Work to be performed, existing access conditions, and expected additional tasks necessary and scheduled to obtain access; and
- (h) Field activity work, sampling, and reporting schedule.

Completion of all sampling and data collection efforts of each building must be completed within 60 days of EPA approval of the individual Building-Specific Work Plan.

Building-Specific Vapor Intrusion Sampling and Evaluation Reports

Within 60 days of completion of sampling performed in accordance with the Building-Specific Vapor Intrusion Sampling and Analysis Work Plan, the Settling Defendants shall submit a Building-Specific Vapor Intrusion Sampling and Evaluation Report to support EPA's determination of the appropriate response action tier for the specific building or property. The Report shall include, but not be limited to the following:

- (a) Building conditions, occupancy and use conditions, summary of all building-specific data, including identification of relevant historical potential pathways for subsurface vapor intrusion;
- (b) Description and summary of all lines of evidence and specific data collected to determine response action tier;
- (c) Map of building layout and actual sampling locations;
- (d) Sampling and data collection results and summary of data;
- (e) Laboratory analytical data;
- (f) Proposed response action tier designation and, where necessary, indicate what additional information is needed to determine response action tier; and
- (g) Quality Assurance/Quality Control data and activities.

***4.2.3. Site-wide Vapor Intrusion Operations, Maintenance, Monitoring, and Management (OMMM) Plan***

The Settling Defendants shall submit a Site-wide Vapor Intrusion Operations, Maintenance, Monitoring and Management (OMMM) Plan. The OMMM Plan shall include:

- (a) A Site-wide Vapor Intrusion Operations, Maintenance and Monitoring Program for Area A and Tier 1 Buildings; and
- (b) A Site-wide Vapor Intrusion Monitoring and Management Program for Area C, D, and F Buildings.

Site-wide Vapor Intrusion Operations, Maintenance and Monitoring (OM&M) Program (for Area A and Tier 1 Buildings)

The Site-wide OM&M Program shall address the long-term vapor intrusion operations, maintenance, and monitoring of all components of the engineered vapor intrusion remedy for Area A Buildings and Tier 1 Buildings. The engineering controls include sub-slab/sub-membrane ventilation systems and vapor barriers. The OM&M Program is intended to be a long-term ongoing program to which the plans, specifications, and design conditions of the

building-specific plans and design documents shall conform. The OM&M Program shall include, but not be limited to, the following:

- (a) General descriptions of the type of vapor intrusion control system used or anticipated to be used;
- (b) For each type of vapor intrusion control system, a description and schedule of normal operation and maintenance tasks, including equipment and material requirements, anticipated equipment replacement for significant components, availability of spare parts, provisions for remote monitoring and control, operator training and certification requirements, staffing needs, and related requirements;
- (c) Project organization, contact information, and responsibility of tasks;
- (d) Description of record keeping and reporting requirements, including operating and inspection logs, maintenance record and checklists, and periodic reports;
- (e) Description and analysis of potential operating problems and contingency plan (e.g., equipment failure, higher than expected contaminant concentrations), including emergency operating and response activities and relevant health and safety information;
- (f) Recommended frequency and methodologies of sampling, types of samples, and performance monitoring to evaluate the effectiveness of the vapor intrusion control system;
- (g) Description of how the monitoring data will be analyzed, interpreted, and reported to EPA, property owner, and tenants;
- (h) Description of air emission monitoring to verify that air emissions from treatment operations do not exceed requirements established by the Bay Area Air Quality Management District;
- (i) Quality Assurance/Quality Control tasks;
- (j) Operations, maintenance, and monitoring schedule;
- (k) Description of the data management and reporting system for OM&M data and discussion of how the historical data and future data collection will be organized, managed, and reported to EPA, property owners, and the public;
- (l) Description of data and reporting format and electronic presentation of all relevant data by building and property, including but not limited to building-specific data, analytical sampling data, and quality assurance/quality control data.
- (m) Description of reporting format for progress reports and distribution list of electronic and hardcopy submittals to EPA, the property and building owners, and the public;
- (n) Types of information that will be posted and regularly updated on a publicly available website; and
- (o) Proposed decision-making process and criteria for determining the engineering control is no longer necessary as a vapor intrusion remedy (i.e., shut-down criteria).

Site-wide Vapor Intrusion Monitoring and Management Program (for Area C, D, and F Buildings)

The Site-wide OMMM Plan shall also include a description of the Monitoring and Management Program to address existing **Area C, D, and F Buildings**. The elements of the Monitoring and Management Program shall include, but not be limited to, the following:

- (a) Description of the types of monitoring data to be collected, including sampling and data gathering methods;
- (b) Recommended frequency (minimum 5 years) and methodologies of sampling, types of samples, and monitoring;
- (c) Quality Assurance/Quality Control tasks;
- (d) Project organization, contact information, and responsibility of tasks;
- (e) Monitoring schedule;
- (f) Description of notification and coordination with EPA, property owner, and building management and tenants, for collection of samples and monitoring data;
- (g) Description of the data management and reporting system for long-term monitoring data and discussion of how the historical data and future data collection will be organized, managed, and reported to EPA, property owners, and the public;
- (h) Description of data and reporting format and electronic presentation of all relevant data by building and property, including but not limited to building-specific data, analytical sampling data, and quality assurance/quality control data;
- (i) Description of reporting format for progress reports and distribution list of electronic and hardcopy submittals to EPA, the property and building owners, and the public;
- (j) Types of information that will be posted and regularly updated on a publicly available website; and
- (k) Proposed decision-making process and criteria for determining that long-term monitoring is no longer necessary or no action is required.

#### **4.3. Remedial Design for Future Construction**

Upon review of the Building-Specific Vapor Intrusion Sampling and Evaluation Report (Section 4.2.2), EPA will determine whether the planned construction falls into Tier 1 or Tier 2. *See* Table 7 of RODA. If EPA assigns the construction to Tier 1, a Building-Specific remedy will be necessary, including the elements laid out below. If EPA assigns the construction to Tier 2, Settling Defendants shall perform indoor air sampling once construction is complete. Based on the results of that sampling, EPA will notify Settling Defendants if any further remedial design or remedial action will be required.

#### ***4.3.1. Engineering Controls for New Construction Element of Work***

##### **General Requirements:**

- (a) Settling Defendants shall implement the remedy for new buildings constructed on properties located in Areas C, D and F where EPA determines that the lines of evidence indicate that there is the potential for vapor intrusion into the new building above indoor air cleanup levels, as specified in RODA Table 2, page 2-11.
- (b) To confirm the effectiveness of vapor intrusion controls, the Settling Defendants shall perform indoor air sampling, including but not limited to, collection of indoor and outdoor air samples, and evaluation to determine whether indoor air cleanup levels are met and to verify the remedial action is effective.
- (c) For Tier 2 buildings, if the cleanup levels are clearly exceeded, the Settling Defendants shall implement the remedy specified in the RODA.
- (d) If the cleanup levels are met, the Settling Defendants shall perform periodic monitoring of the same parameters. The Settling Defendants shall propose, in the draft OM&M Plan, a schedule and protocol for monitoring these parameters, for EPA review and approval.
- (e) Sub-slab probes or indoor air sampling activities shall not result in damage to the interior of any structure. If damage occurs, the Settling Defendants shall work directly with the property owner to make repairs.
- (f) All Work shall be implemented in such a way as to minimize disruption to the occupants or damage the building. If damage occurs, the Settling Defendants shall work directly with the property owner to make repairs.

#### ***4.3.2. Building-Specific Vapor Intrusion Control System Remedial Design (Tier 1)***

A Building-Specific Remedial Design is required for each building or property requiring an engineered remedy (e.g., Tier 1 Building). Within 60 days following tiering of a building requiring implementation of an engineered remedy, the Settling Defendants must submit a Building-Specific Vapor Intrusion Control System Remedial Design that includes, but is not limited to, the following components:

- (a) Description of the work to be performed;
- (b) Description of access requirements for the work to be performed, existing access conditions, and expected additional tasks necessary and scheduled to obtain access;
- (c) Design basis including results of any pilot test and other specific data relied upon for the design;
- (d) Design analysis and permitting plan necessary to satisfy all permitting requirements;
- (e) Building plan and detailed design plans, drawings, and specifications;

- (f) Site preparation requirements;
- (g) List of materials, equipment, and recommended vendors;
- (h) Design criteria including detailed description of compliance with performance criteria and 2011 ROD Amendment;
- (i) Design drawings including site and construction plans and drawings, utility lines, piping, and instrument drawings;
- (j) Construction quality assurance/quality control plan;
- (k) Contingency plan;
- (l) Building-Specific ICs Implementation Plan; and
- (m) Task list and schedule for implementation.

#### ***4.3.3. Building-Specific Vapor Intrusion Operations, Maintenance, and Monitoring (OM&M) Plan***

All Tier 1 buildings require a Building-Specific OM&M Plan for the engineered vapor intrusion control system remedy.

Within 60 days of EPA approval of the Building-Specific Vapor Intrusion Control System Remedial Design (pursuant to SOW Section 4.3.2), the Settling Defendants shall submit a Building-Specific OM&M Plan. The Building-Specific OM&M Plan shall conform to the plans, specifications, design conditions and be consistent with and may reference specific portions of the Site-wide OM&M Plan for general methodologies, as applicable. Each Building-Specific OM&M Plan shall set forth the ICs specific to that building or property and be consistent with the Site-wide ICIAP.

The draft and final Building-Specific OM&M Plan shall include, but not be limited to, the following:

- (a) Description of vapor intrusion control system(s) used;
- (b) Description and schedule of normal operation and maintenance tasks, including equipment and material requirements, anticipated equipment replacement for significant components, availability of spare parts, and, where appropriate, provisions for remote monitoring and control, operator training and certification requirements, staffing needs, and related requirements;
- (c) Description of record keeping and reporting requirements, including operation and inspection logs, maintenance records and checklists;
- (d) Description and analysis of potential operating problems and contingency plan (e.g., equipment failure, higher than expected contaminant concentrations), including emergency operating and response activities and relevant health and safety information;



- (e) Description of the types of monitoring data to be collected, including sampling and data gathering methods;
- (f) Recommended frequency and methodologies of sampling, types of samples, and performance monitoring;
- (g) Description of how the performance data will be analyzed, interpreted, and reported to evaluate system performance;
- (h) Description of air emission monitoring to verify that air emissions from treatment operations do not exceed requirements established by the Bay Area Air Quality Management District, if applicable;
- (i) Quality Assurance/Quality Control activities;
- (j) Project organization and responsibility;
- (k) Overall operations, maintenance, and monitoring schedule;
- (l) Description of notifications and coordination with EPA and property owner, building manager, or tenants for collection of monitoring data;
- (m) Description of the building-specific ICs monitoring, management, and implementation plan;
- (n) Proposed decision-making process and criteria for determining the vapor intrusion control system is no longer necessary as a vapor intrusion remedy (i.e., shut-down criteria); and
- (o) Description of the contents, format, and frequency of progress reporting.

#### **4.4. Remedial Action for Future Buildings**

##### ***4.4.1. Building-Specific Vapor Intrusion Remedial Action***

Within 90 days of EPA's approval of a Building-Specific Vapor Intrusion Control System Remedial Design, the Settling Defendants shall begin the construction, installation, and implementation of the engineered vapor intrusion control system.

##### ***4.4.2. Building-Specific Vapor Intrusion Remedial Action Implementation Report***

Within 60 days of implementation of the engineered vapor intrusion control system, the Settling Defendants shall submit a Building-Specific Vapor Intrusion Response Action Implementation Report documenting the completion of the response actions. The Building-Specific Response Action Implementation Report shall include, but not be limited to, the following:

- (a) Summary of construction activities and chronology of events;
- (b) As-Built construction drawings and specifications of all components of the vapor intrusion remedy;

- (c) Contract pre-final inspection and final inspection, if needed, and certification;
- (d) Confirmation sampling and performance monitoring results;
- (e) Summary of project costs;
- (f) Discussion and reference to the draft Building-Specific Operations, Maintenance, and Monitoring Plan; and
- (g) Discussion of and reference to the Building-Specific Vapor Intrusion ICs Implementation Plan, documentation of ICs are in place, and a schedule for implementation of any ICs that are not in place.

#### **4.5. Site-wide Vapor Intrusion Remedial Action Completion Report**

Within 90 days after Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been achieved, Settling Defendants shall submit to EPA a Site-wide Vapor Intrusion Remedial Action Completion Report. The Report shall document the completion of the implementation of the Site-wide Vapor Intrusion Remedial Action Program, and the contents of the Report shall include the elements outlined in EPA's *Close Out Procedures for National Priorities List Sites*, OSWER Directive 9320.2-22, May 2011, including but not limited to, the following:

- (a) Demonstrating that all response actions have been implemented at all existing buildings requiring a response action and that the necessary ICs are in place; and
- (b) Construction activities, chronology of events, performance standards and construction quality control, final inspections and certifications, operations and maintenance activities, and summary of project costs.

## **5. INSTITUTIONAL CONTROLS ELEMENT OF WORK**

The Settling Defendant shall submit an Institutional Controls Implementation and Assurance Plan (ICIAP) which shall describe monitoring activities, schedules, and task responsibilities for the Site. The Institutional Controls (ICs) Element of Work consists of the following four components of work: informational outreach, building permit review, well permit review, and restrictive covenants. The performance standards for these components are described below.

### **5.1. Institutional Controls Implementation and Assurance Plan**

The ICIAP shall describe plans to implement and maintain the ICs at the Site. The ICIAP shall describe all previously implemented ICs and ICs selected by RODA. This description shall include:

- (a) A description of the restrictions of each IC, including:
  - i. A map and legal description of the boundaries of the areas covered by the ICs;
  - ii. A demonstration that the ICs address all Land Use Restrictions and encompass all areas that require restrictions after implementation of the Remedial Action, and a description of the manner in which they accomplish it;
  - iii. A description of how the ICs relate to the current and reasonably anticipated future land use assumptions underlying the selected response action(s).
- (b) Information ICs – a description of all informational ICs including specific plans and schedules for their implementation
- (c) Proprietary Controls – provide an outline of the process for implementing Proprietary Controls in applicable parts of the Site
- (d) Governmental Controls - a description of the selected governmental controls, including the Permit Review IC and the Well Permit Review IC. This description shall include:
  - i. The identity of the governmental entity, agency or department with authority to implement, maintain, and/or enforce the control, including contact information for person(s) responsible for implementing such control.
  - ii. A copy of and legal citation to the governmental controls, including a description of applicable legal or administrative rules and procedures governing their application.
  - iii. A description of, and map showing the boundaries of the governmental controls, including a description of the extent to which such controls cover the area that requires them.
- (e) A description of plans for monitoring, maintaining, reporting on, and ensuring the continued efficacy of the ICs. The description shall include:
  - i. Monitoring to determine compliance with and efficacy of the ICs shall include:
    - Annual inspections of the areas affected by the ICs;

- Interviews with owners, lessees and other holders of properties affected by ICs;
  - Interviews with government officials regarding compliance with implemented governmental controls; and
  - Review of any planned future uses of the affected property to determine whether such uses are consistent with the ICs.
- ii. Annual reports regarding monitoring of, compliance with, and efficacy of the ICs, and a schedule for submitting the annual reports. The annual reports shall include:
- Descriptions of the monitoring conducted during the reporting period;
  - Certifications by the Settling Defendants that the ICs remain in place and are effective;
  - For the groundwater controls: (1) a map showing the location of all current groundwater wells located in and around the groundwater control areas; (2) a map presenting the most updated groundwater contaminant monitoring results for the wells located in and around the groundwater control areas; and (3) a discussion of whether the IC boundaries are sufficient to prevent exposure to contaminated groundwater;
  - Update of the title commitment, at least once every five years, to identify all current ownership interests.
- iii. A plan to ensure that current ownership interests will become and/or will continue to be consistent with the ICs.
- (f) A description of Notification and Contingency Plans:
- i. To enforce the ICs in the event there is noncompliance with an IC;
  - ii. Contingency Plans if ICs cannot be implemented, are ineffective, or are not sufficient to prevent exposure.
- (g) General Provisions of the ICIAP:
- i. All legal descriptions shall be prepared according to current ALTA Survey guidelines and certified by a licensed surveyor.
  - ii. All maps and GIS information shall include, for the areas described, boundaries of the areas, property ownership, streets, easements, assessor parcel numbers and other recorded plat or survey information.
  - iii. GIS coordinates must be formatted into an ESRI polygon shape file and the UTM zone must be identified. The shape file shall be projected into the UTM, NAD 83 projection system. Each shape file shall include an attribute name for each polygon submitted (e. g., "site boundary," "groundwater use prohibited," etc.)

### ***5.1.1. Site-wide Institutional Controls Implementation, Management and Monitoring***

#### **Site-Wide ICs Implementation Plan**

The Building-specific and Site-wide ICs in certain instances will be layered and overlap with each other. ICs will be required to ensure that: (1) the required engineering controls are

appropriately operated and are not interfered with; (2) appropriate vapor intrusion controls are installed in new building construction where required; (3) building owners and occupants are provided information regarding applicable operating remedy requirements; and (4) building owners and tenants provide information to EPA and the Settling Defendants regarding changes to the building occupancy or structure that may impact the remedy.

The Site-wide ICIAP shall include, but not be limited to, the following:

- (a) Description of how the ICs will meet the four requirements in the above paragraph;
- (b) Detailed description of governmental controls (permitting and building requirements) requiring installation of the appropriate engineering controls on future construction, including the following:
  - i. Which ICs are/will be addressed through the City of Mountain View's permitting and building requirements; and
  - ii. How the Settling Defendants will ensure that these requirements will be implemented.
- (c) Detailed description of any proprietary controls that become necessary (i.e., if and when an engineered remedy is required), including a description of recorded agreements with current property owners, a plan for acquiring the agreements, and a template to be used for the agreements including provisions for the following:
  - i. provision for operation of and non-interference with engineering controls;
  - ii. incorporation of vapor intrusion controls in new construction;
  - iii. provision of information to building owners and occupants of remedy requirements, and,
  - iv. requirements to inform EPA and the Settling Defendants regarding occupancy or structural changes that may impact the remedy;
- (d) Detailed description of types of informational devices and how they will be used, including: notification and informational tracking systems that will be utilized to ensure proper notification to EPA and the Settling Defendants regarding changes to the building structure, foundation, or subsurface areas, creation of potential pathways from the subsurface into the building, changes in property ownership, and changes in building occupancy that may impact the vapor intrusion remedy and monitoring of the remedy;
- (e) Detailed description of the tracking mechanism for ongoing ICs monitoring; and
- (f) Schedule for ICs implementation.

#### Informational Outreach Component of Work

Requirements:

- (a) Informational outreach shall be applied to all Site properties. The targeted audience includes owners, tenants, prospective owners and tenants, developers and other professionals supporting the above.
- (b) Environmental information about the properties shall be made available, including data from the remedial investigation and information from the RODA and any other information as determined by EPA.
- (c) The Settling Defendants shall, in the ICIAP, specify a plan and schedule for preparing the outreach material to be used in the outreach tools (mailings, websites, publically accessible databases, and any other venue proposed by Settling Defendants or directed by EPA) and implementing the outreach tools. The ICIAP is subject to review and approval by EPA pursuant to Section 9 (schedule) of this SOW. Each deliverable prepared and submitted pursuant to the ICIAP (i.e. draft versions of the tools) shall be reviewed and approved by EPA.
- (d) Settling Defendants shall, in the ICIAP, specify a frequency for sending the mailings, which includes a frequency for updating ownership and tenant contact information.
- (e) Settling Defendants shall, in the ICIAP, specify the publically accessible databases that will be utilized to house site information, and specify the process required to place our information in those databases.
- (f) Settling Defendants shall, in the ICIAP, specify any other outreach venue they propose to use, and specify a plan and schedule for utilizing those tools.
- (g) The Settling Defendants shall monitor the Information Outreach IC, as long as residual contamination warrants, as determined by EPA. The Settling Defendants shall, in the ICIAP, specify the methods and frequency that will be used to monitor the tools implemented in this component of work. The frequency shall be at least annually, unless approved otherwise by EPA.

#### Building Permit Review Component of Work

##### Requirements:

- (a) Building Permit Review shall be applied to site properties located in Areas C, D and F.
- (b) The Settling Defendants shall monitor underground service alerts for notifications of intent to perform subsurface work at the Site. Upon notifications Settling Defendants shall contact the applicant.
- (c) The Settling Defendants shall work with City of Mountain View or other appropriate agencies in the Building Permit Review IC, to the minimum extent that said agencies notify applicants based on the established criteria.
- (d) Settling Defendants shall include in the ICIAP all the steps required to implement the Permit Review IC, this may include conducting initial meetings/teleconferences with applicants upon being notified or otherwise becoming aware of a planned project; reviewing applicants' project and existing environmental information; preparing a Summary Letter Report (SLR) including, among other things, a recommendation for

follow-up action; conducting any follow-up actions; and submitting results from any follow-up actions.

- (e) The Settling Defendants shall monitor the City of Mountain View's Building Permit Review IC, as long as residual contamination warrants, as determined by EPA. The Settling Defendants shall, in the ICIAP, specify the methods and frequency that will be used to monitor the tools implemented in this component of work. The frequency shall be at least annually, unless approved otherwise by EPA.

#### Well Permit Review Component of Work

##### Requirements:

- (a) Well Permit Review shall be applied site wide.
- (b) The Settling Defendants shall monitor notifications of intent to install or use wells at the Site. Upon notifications Settling Defendants shall contact the applicant.
- (c) The Settling Defendants shall work with the Santa Clara Valley Water District, the Santa Clara County Department of Environmental Health or other appropriate agencies in the Well Permit Review IC, to the minimum extent that said agencies notify applicants based on the established criteria.
- (d) Settling Defendants shall include in the ICIAP all the steps required to implement the Well Permit Review IC, this may include conducting initial meetings/teleconferences with applicants upon being notified or otherwise becoming aware of a planned well project; reviewing applicants' project and existing environmental information; preparing an SLR including, among other things, a recommendation for follow-up actions; conducting any follow-up actions; and submitting results from any follow-up actions to EPA.
- (e) The Settling Defendants shall monitor the Santa Clara Valley Water District's Well Permit Review IC, as long as residual contamination warrants, as determined by EPA. The Settling Defendants shall, in the ICIAP, specify the methods and frequency that will be used to monitor the tools implemented in this component of work. The frequency shall be at least annually, unless approved otherwise by EPA.

#### Restrictive Covenants Component of Work

The Restrictive Covenants IC includes the property owner and RWQCB entering into a legal agreement for those areas potentially requiring a vapor intrusion control system, Areas C, D, and F. The objectives are to ensure any new construction or redevelopment plans obtain EPA review and approval prior to initiation of such work; prohibit interference with remedial activities, systems, or components (including both investigation and cleanup activities); and prohibit drilling into and use of groundwater without prior approval by EPA.

##### Requirements:



- (a) Settling Defendants shall, in the ICIAP, specify a plan and schedule for preparing the draft restrictive covenant, obtaining a title insurance commitment, obtaining release or subordination of prior liens and encumbrances, negotiating agreements with property owners, obtaining executed covenants, updating the title searches, recording the covenants, and providing the final title insurance.
- (b) Preparation of the draft covenant includes submitting the draft to EPA for review and approval.
- (c) Negotiating the agreement with property owners includes identifying owners, contacting owners and explaining the restrictive covenant component, coordinating any necessary follow-up discussions with the agencies and owners, taking an active role in resolving any issues with owners, and finalizing and executing the covenants.
- (d) The requirements of the restrictive covenant component is described in Section IX of the CD, including the requirements for the covenant itself, the title insurance commitment, the release or subordination of the liens and encumbrances, the updated title search, the recordation in the appropriate land records office, and the final title insurance.
- (e) The Settling Defendants shall monitor this IC, as long as residual contamination warrants, as determined by EPA. The Settling Defendants shall, in the ICIAP, specify the methods and frequency that will be used to monitor the tools implemented in this component of work. The frequency shall be at least annually, unless approved otherwise by EPA.

## **6. OTHER REQUIREMENTS AND DELIVERABLES**

### **6.1. Sampling and Analysis Plan(s)**

In accordance with Section VIII of the Consent Decree, Settling Defendants shall prepare one or more Sampling and Analysis Plans (SAP) for field and laboratory activities required to implement the Work.

Each SAP shall include a Field Sampling Plan (FSP), a Quality Assurance Project Plan (QAPP), and a schedule for implementation of sampling, analysis, and reporting activities. The FSP and QAPP shall be submitted together as one document. Upon EPA approval of a SAP, the Settling Defendants shall implement the activities described in the SAP.

a. The FSP shall describe sampling objectives, sampling locations and frequencies, sampling equipment and procedures, sample handling and analysis, sample paperwork and chain-of-custody procedures, analytical requirements, sample preservation, sample packing, QA/QC samples, and management of investigation-derived wastes.

The FSP shall be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. The FSP shall include a schedule that describes activities that must be completed in advance of sampling, including access agreements and arrangements for disposal of investigation-derived waste. The FSP shall include provisions for the collection of split samples by EPA.

b. The QAPP shall describe monitoring objectives, data quality objectives (DQOs), and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the DQOs. The DQOs shall, at a minimum, reflect use of analytical methods for obtaining data of sufficient quality to meet National Contingency Plan requirements as identified at 300.435 (b). In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, document control procedures, preservation of records (see Section XXV of Consent Decree), data review and validation, data management, and procedures that will be used to enter, store, manipulate, and analyze data.

Settling Defendants shall submit analytical data and well construction information to EPA and the State concurrently with the report documenting the larger action – e.g., the RDI Report or the RA Report.

Settling Defendants shall demonstrate in advance and to EPA's satisfaction that each laboratory it may use is qualified to conduct the proposed work and meets the requirements specified in Section VIII of the Consent Decree. EPA may require that Settling Defendants submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specification, and laboratory analyses of performance samples (blank and/or spike samples). In addition, EPA may require submittal of data packages equivalent to those generated by the EPA Contract Laboratory Program (CLP).

## **6.2. Health and Safety Plan(s)**

Settling Defendants shall also prepare a Health and Safety Plan in conformance with U.S. Occupational, Safety, and Health Administration (OSHA) requirements as outlined in 29 CFR 1910 and 1926, and any other applicable requirements. The Health and Safety Plan shall describe health and safety risks, employee training, monitoring and personal protective equipment, medical monitoring, levels of protection, safe work practices and safe guards, contingency and emergency planning, and provisions for site control. EPA will review but will neither approve nor disapprove the Settling Defendants' Health and Safety Plan.

## **7. CONTINGENT ACTIONS**

### **7.1. Potential Contingent Actions**

Settling Defendants shall perform monitoring and evaluations following construction of the Groundwater Remedial Action. Settling Defendants shall conduct contingent actions consistent with the RODA if determined necessary by EPA, if RAOs or cleanup levels are not or will not be met. These actions could include, but would not necessarily be limited to: installing additional wells, operating additional EAB systems, enhancing EAB system; injecting substrates, chemicals, and amendments, or communicating with parties subject to or involved with institutional controls.

### **7.2. Evaluations for Contingent Actions**

If EPA determines that contingent actions are necessary to meet the RAOs or cleanup levels, then Settling Defendants shall perform additional field investigations, evaluations of alternatives or technologies, RDs, and RAs necessary to perform each contingent action. The schedule for each of the deliverables listed below will be set by EPA based upon the required scope of work if EPA determines that any contingent actions are necessary.

### **7.3. Additional Field Investigations**

Settling Defendants shall conduct additional field investigations as necessary to define the area and/or media requiring Contingent Action. An FSP shall be prepared for each of these investigations and shall include or reference existing QAPPs, HSPs, and FSPs prepared in accordance with Section 6 of this SOW. The results of the field investigations shall be summarized in a supplement to the Remedial Investigation, unless otherwise approved by EPA. The supplement shall include analyses and conclusions based upon the field investigations as well as a summary of the data.

### **7.4. Implementation of Contingent Action**

Settling Defendants shall implement the selected contingent action in accordance with the RODA and/or other decision documents prepared by EPA.

### **7.5. Other Modifications**

If EPA determines that implementation of any contingent action will result in necessary modifications to the SMP, O&M Plan, HSP, or other supporting documents, Settling Defendants shall modify those documents.

## 8. SCHEDULE FOR GROUNDWATER AND SITE-WIDE INSTITUTIONAL CONTROLS WORK ACTIVITIES AND DELIVERABLES

Table 5. Schedule for Major Deliverables for Groundwater and Site-wide Institutional Controls Work.

Ref SOW Section	Ref CD Section	Activity or Deliverable	Due <sup>1, 2, 3, 4</sup>	EPA Estimated Review period <sup>5, 6</sup>
1.4	VI	Notification of Proposed Supervising Contractor, including submittal of QMP	10 days after lodging of the CD	14 days
-	XII	Notification of Project Coordinator and Alternate Project Coordinator	10 days after lodging of the CD	-
-	XVII	Proof of commercial general liability and automobile liability insurance	15 days before commencing any on-Site Work	-
<b>Communications and Reporting</b>				
1.5.1	X	Bi-monthly Progress Reports	10 <sup>th</sup> day of every other month, beginning the month after the CD is lodged	N/A
1.5.3		Groundwater Monitoring Annual Report	Annually on March 15 <sup>th</sup>	45 days
1.5.4	-	Meeting Notes	5 days of meetings where critical decision made	N/A
1.5.5		Notification of Noncompliance or Potential Noncompliance	72 hours after receipt of information indicating noncompliance or potential noncompliance	-
<b>Remedial Design Groundwater Remedy</b>				
3.1	VI	RD Work Plan	90 days after EPA's issuance of an authorization to proceed	30 days
3.1.8	VI	Remedial Design Investigation Work Plan	To be submitted concurrent with RD Work Plan	60 days
3.1.8	VI	Remedial Design Investigation (RDI)	Initiated within 60 days of EPA approval of RDI Work Plan	N/A
3.2.1	VI	Remedial Design Investigation Report	As specified in approved RD Work Plan. Can be combined with Preliminary Design	45 days

<b>Ref SOW Section</b>	<b>Ref CD Section</b>	<b>Activity or Deliverable</b>	<b>Due <sup>1, 2, 3, 4</sup></b>	<b>EPA Estimated Review period <sup>5, 6</sup></b>
3.2.4	VI	Preliminary Design	90 days after approval of the RDI Report or if combined 120 days after RDI field work completed.	30 days
3.3.7	VI	Construction Health and Safety Plan	Due at Final Design	
3.2.2	VI	Pre-final Design	90 days after EPA approval of the RD Preliminary Design	30 days
3.2.2.1	VI	Operation and Maintenance (O&M) Plan	Due concurrent with, and may be combined with, the Pre-final Design submittal. Final to be submitted separately and due concurrent with Final Construction Inspection.	30 days
3.2.2.2	VI	Performance Monitoring and Evaluation Plan	Due concurrent with, and may be combined with, Pre-final Design submittal.	30 days
3.2.2.3	VI	Construction Quality Assurance Plan	Due concurrent with, and may be combined with, Pre-final Design submittal.	30 days
3.2.4	VI	Final Design	30 days after EPA comments on the Pre-final Design	21 days
3.3.1	VI	Remedial Action Work Plan	30 days after EPA approval of the Final Design	30 days
3.3.2	-	Notification of selected construction contractor	As specified in approved RA Work Plan	7 days
3.3.3	-	Pre-construction Meeting	As specified in approved RA Work Plan	-
3.3.4	VI	RA Implementation	As specified in approved RA Work Plan	-
3.3.5	XIV	Notification of pre-certification inspection for completion of Remedial Action	At least 14 days before pre-certification inspection	-
3.3.5	XIV	Pre-certification inspection for completion of Remedial Action	90 days after Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards are being achieved	-
3.3.5	XIV	RA Report and Request for Certification of Completion of the Remedial Action (or written submittal that identifies actions and a schedule to resolve outstanding construction items)	30 days after the pre-certification inspection	30 days

<b>Ref SOW Section</b>	<b>Ref CD Section</b>	<b>Activity or Deliverable</b>	<b>Due <sup>1, 2, 3, 4</sup></b>	<b>EPA Estimated Review period <sup>5, 6</sup></b>
3.3.5	XIV	Additional pre-certification inspections for completion of Remedial Action (if needed)	As specified or approved by EPA	-
5.0	-	ICIAP	60 days after EPA approval of the Groundwater RD Work Plan	30 days

<sup>1</sup> Unless otherwise indicated, all deliverables shall be provided in an electronic format (e.g., PDF and Microsoft Word) to EPA and EPA's consultant. Paper copies are required for the following: RD Work Plan, RDI Work Plan, PMEP, Preliminary, Pre-final, and Final Design submittals.

<sup>2</sup> All deliverables set forth in Table 5 will be reviewed and approved by EPA in accordance with Section XI of the CD, except for the Health and Safety Plan(s), which will be reviewed but neither approved nor disapproved.

<sup>3</sup> Revised versions of documents, if needed, are due 30 days after receipt of EPA comments, unless specified otherwise in this section or in writing by EPA.

<sup>4</sup> Information presented in color must be interpretable when reproduced in black and white.

<sup>5</sup> Estimated time is in calendar days.

<sup>6</sup> Failure to review a deliverable within the estimated time shall not constitute a violation of the Consent Decree by the United States.



## 9. SCHEDULE FOR VAPOR INTRUSION WORK ACTIVITIES AND DELIVERABLES

Table 6. Schedule for Major Deliverables for Vapor Intrusion Work Activities<sup>1</sup>

Ref SOW Section	Type	Activity or Deliverable <sup>2,3,4,5</sup>	Due
4.2.1	Site-wide	Site-wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering	90 days after EPA's issuance of an authorization to proceed
4.2.2	<i>Building-Specific</i>	<i>Building-Specific Vapor Intrusion Sampling and Analysis Work Plan</i>	<i>45 days after EPA written notification of new construction</i>
4.2.2	<i>Building-Specific</i>	<i>Completion of all sampling and data collection for building-specific work</i>	<i>30 days after EPA approval of Building-Specific Work Plan</i>
4.2.2	<i>Building-Specific</i>	<i>Building-Specific Vapor Intrusion Sampling and Evaluation Report</i>	<i>60 days after completion of building-specific sampling</i>
4.2.3	Site-wide	Site-wide Vapor Intrusion Operations, Maintenance, Monitoring and Management (OMMM) Plan	60 days after EPA approval of Site-wide Vapor Intrusion Sampling and Analysis Work Plan for Response Action Tiering
4.3.1 4.3.2	<i>Building-Specific</i>	<i>Building-Specific Vapor Intrusion Control System Remedial Design</i>	<i>60 days after EPA written notification of need for Remedial Design</i>
4.3.3	Building-Specific	Building-Specific Vapor Intrusion Operations, Maintenance and Monitoring (OM&M) Plan (Area A and Tier 1 Buildings)	For Area A: Submitted as part of Site-wide OMMM Plan (4.2.3) <i>For Tier 1: 60 days after EPA approval of Building-Specific Remedial Design</i>
4.4.1	<i>Building-Specific</i>	<i>Initiation of construction, installation, and implementation of engineered vapor intrusion control system or response action</i>	<i>90 days after EPA approval of Building-Specific Remedial Design</i>
4.4.2	<i>Building-Specific</i>	<i>Building-Specific Vapor Intrusion Remedial Action Implementation Report</i>	<i>60 days after implementation of remedial action</i>
4.5	Site-wide	Site-wide Vapor Intrusion Remedial Action Completion Report	90 days after Settling Defendants conclude that Remedial Action is complete; final due 30 days after EPA issues comments.
1.5.2	<i>Site-wide</i>	<i>Monthly Vapor Intrusion Field Activity and Progress Report</i>	<i>Monthly while field work and implementation of vapor intrusion remedy is being conducted. Due</i>

<sup>1</sup> Actions in italic text are contingent on EPA's determination that building-specific work is necessary.

Ref SOW Section	Type	Activity or Deliverable <sup>2,3,4,5</sup>	Due
			<i>second Tuesday of each month.</i>
1.5.4	Site-wide	Vapor Intrusion Annual Report (January 1 – December 31)	Due annually on March 15th

<sup>2</sup> Unless otherwise indicated, all deliverables shall be provided in an electronic format (e.g., PDF and Microsoft Word) to EPA and EPA's consultant. Paper copies are required for Design submittals.

<sup>3</sup> All deliverables set forth in Table 6 will be reviewed and approved by EPA in accordance with Section XI of the CD, except for the Health and Safety Plan(s), which will be reviewed but neither approved nor disapproved.

<sup>4</sup> Revised versions of documents, if needed, are due 30 days after receipt of EPA comments, unless specified otherwise in this section or in writing by EPA.

<sup>5</sup> Information presented in color must be interpretable when reproduced in black and white.

## References/guidance documents

The following list, although not comprehensive, consists of many of the regulations and guidance documents that apply to the RD/RA process:

1. *Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP), Parts 1, 2 and 3, EPA-505-B-04-900A, B and C, March 2005 (see Section V.A. of the Remedial Design SOW).*
2. *Construction Specifications Institute's Manual of Practice, 1985 edition, available from the Construction Specifications Institute, 601 Madison Street, Alexandria, Virginia 22314.*
3. *Greener Cleanups Policy - EPA Region 9, issued September 14, 2009; found at: <http://www.epa.gov/region09/climatechange/green-sites.html>.*
4. *Superfund Green Remediation Strategy, draft dated August 2009, <http://www.epa.gov/superfund/greenremediation/sf-gr-strategy.pdf>.*
5. *CERCLA Compliance with Other Laws Plan, Two Volumes, EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234. 1-01 and -02.*
6. *Superfund Community Involvement Handbook, U. S. EPA, Office of Solid Waste and Emergency Response, April 2005, EPA-540-K-05-003.*
7. *EPA Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4, 2006).*
8. *Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.*
9. *Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U. S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283. 1-2.*
10. *Guide to Management of Investigation-Derived Wastes, U. S. EPA, Office of Solid Waste and Emergency Response, Publication 9345. 3-03FS, January 1992.*
11. *Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U. S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234. 0-05.*
12. *Institutional Controls: A Guide to Implementing, Monitoring and Enforcing Institutional Controls at Superfund, Brownfields, Federal Facility, UST and RCRA Corrective Action Cleanups, (Draft), February 2003, OSWER 9355. 0-89, EPA 540-R-04-002, <http://www.epa.gov/superfund/action/ic/guide/index.htm>*

13. *National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.*
14. *Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355. 7-03.*
15. *Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.*
16. *Remedial Design/Remedial Action (RD/RA) Handbook, U. S. EPA, Office of Solid Waste and Emergency Response (OSWER), 9355. 0-04B, EPA 540/R-95/059, June 1995.*
17. *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, U. S. EPA, EPA/240/B-01/003, March 2001, Reissued May 2006.*
18. *Guidance for Quality Assurance Project Plans, U. S. EPA, EPA/240/R-02/009, December 2002.*
19. *Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.*
20. *Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.*
21. *Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.*
22. *Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.*
23. *Value Engineering (Fact Sheet), U. S. EPA, Office of Solid Waste and Emergency Response, Publication 9355. 5-03FS, May 1990.*
24. *EPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review, EPA-540-R-00-006, June 2001.*
25. *EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008.*
26. *American National Standards Practices for Respiratory Protection. American National Standards Institute Z88. 2-1980, March 11, 1981.*
27. *A Compendium of Superfund Field Operations Methods, Two Volumes, EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355. 0-14.*

28. *Data Quality Objectives for Remedial Response Activities, EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335. 0-7B.*
29. *Engineering Support Branch Standard Operating Procedures and Quality Assurance Plan, EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).*
30. *NIOSH Plan of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.*
31. *Occupational Safety and Health Guidance Plan for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.*
32. *Superfund Remedial Design and Remedial Action Guidance, EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355. 0-4A.*
33. *EPA Region IX Sampling and Analysis Plan Guidance and Template (R9QA/002. 1, April, 2000).*
34. *Draft: Region 9 Superfund Data Evaluation/Validation Guidance, EPA, Quality Assurance Office, R9QA/006. 1, December 2001.*
35. *Methods for Monitoring Pump and Treat Performance, EPA, Office of Research and Development, June 1994 (EPA 600/R-94/123).*
36. *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems, EPA, January 2008 (EPA/600/R-08/003).*
37. *Operation and Maintenance in the Superfund Program, EPA, May 2001 (OSWER 9200. 1-37FS, EPA 540-F-01-004).*
38. *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs (American National Standard, January 5, 1995), ANSI/ASQC E4-1994.*
39. *EPA Requirements for Quality Management Plans (QA/R-2), EPA/240/B-01/002, March 2001, reissued May 2006.*
40. *EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis (EPA QA/G-9, 1998).*
41. *Close Out Procedures for National Priorities List Sites, EPA, May 2011 (OSWER Directive 9320.2-22).*

## **Appendix C**







## **Appendix D**

**Appendix D**

**List of Settling Defendants**

CTS Printex, Inc.

ADN Corporation

## **Appendix E**

## APPENDIX E TO CONSENT DECREE

### CORPORATE GUARANTEE

Guarantee made this [date] by CTS Corporation, a business corporation organized under the laws of the State of Indiana (“Guarantor”). This guarantee is made on behalf of CTS Printex, Inc. (“Settling Defendant”) of 905 West Boulevard North, Elkhart, Indiana, 46514, which is a subsidiary of Guarantor to the United States Environmental Protection Agency (EPA).

### RECITALS

1. Pursuant to Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (“CERCLA”), 42 U.S.C. § 9607, Settling Defendant has entered into a Consent Decree with EPA, dated [redacted], 2013, Docket No. [redacted] (the “Consent Decree”), for certain environmental remediation work to be performed at the CTS Printex Superfund Site (the “Site”) in Mountain View, California.
2. Section XIII of the Consent Decree requires that Settling Defendant provide financial assurance to EPA that funds or other resources will be available as and when needed to ensure the full and final completion of the work required to be conducted by Settling Defendant under the Consent Decree.
3. In order to provide part of such financial assurance required by the Consent Decree, Settling Defendant has agreed to provide EPA with a guarantee, issued by Guarantor, of Settling Defendant’s obligations arising under the Consent Decree, all as set forth more fully in this Guarantee.
4. Guarantor meets or exceeds the financial test criteria as specified in the Consent Decree and attached as Exhibits A and B and agrees to comply with the reporting requirements for guarantors as specified in the Consent Decree and 40 CFR 264.143(f).
5. For value received from Settling Defendant, Guarantor guarantees to EPA that in the event that Settling Defendant fails to pay for or perform the work required to be conducted by Settling Defendant under the Consent Decree whenever required to do so, the Guarantor shall do so or immediately upon written demand from EPA deposit into an account specified by EPA, in immediately available funds and without setoff, counterclaim, or condition of any kind, a cash amount up to but not exceeding the estimated cost of the remaining Work to be performed as of such date, as determined by EPA.
5. Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the Guarantor fails to meet the financial test criteria, Guarantor shall send within 90 days, by certified mail, notice to the EPA Superfund Division Director and to Settling Defendant that he intends to provide alternate financial assurance as specified in

the Consent Decree, as applicable, in the name of Settling Defendant. Within 120 days after the end of such fiscal year, the Guarantor shall establish such financial assurance unless Settling Defendant has done so.

6. The Guarantor agrees to notify the EPA Superfund Division Director by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming Guarantor as debtor, within 10 days after commencement of the proceeding.

7. Guarantor agrees that within 30 days after being notified by an EPA Superfund Division Director of a determination that Guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor, he shall establish alternate financial assurance as specified in the Consent Decree, as applicable, in the name of Settling Defendant unless Settling Defendant has done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the Consent Decree or any documents, instruments or agreements executed in connection therewith, the extension or reduction of the time of performance of the work required by the Consent Decree, or any other modification or alteration of an obligation of the Settling Defendant pursuant to the Consent Decree.

9. Guarantor agrees to remain bound under this guarantee for as long as Settling Defendant must comply with the applicable financial assurance requirements of the Consent Decree, except as provided in paragraph 10 of this agreement.

10. Guarantor may terminate this guarantee by sending notice by certified mail to the EPA Superfund Division Director and to Settling Defendant, provided that this guarantee may not be terminated unless and until Settling Defendant obtains, and EPA approves, alternate financial assurance complying with the Consent Decree.

11. Guarantor agrees that if Settling Defendant fails to provide alternate financial assurance as specified in Section XIII of the Consent Decree, as applicable, and obtain written approval of such assurance from the EPA Superfund Division Director within 90 days after a notice of cancellation by the Guarantor is received by the EPA Superfund Division Director from Guarantor, Guarantor shall provide such alternate financial assurance in the name of Settling Defendant.

12. Guarantor expressly waives notice of acceptance of this guarantee by EPA or by Settling Defendant. Guarantor also expressly waives notice of amendments or modifications of the Consent Decree or any documents, instruments or agreements executed in connection therewith.

Effective date:

CTS CORPORATION

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature of witness or notary:

**EXHIBIT A (CFO Letter)**





**CERCLA Financial Assurance Financial Test:  
Sample CFO Letter (for Test Alternative 1)**

[PRP Letterhead]

[Address Block]

[Date]

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dear [\_\_\_\_\_]:

I am the chief financial officer of [name and address of PRP] (the “Company”). This letter is in support of the Company’s use of a financial test to demonstrate financial assurance for the obligations of the Company under that certain [Consent Decree (the “Consent Decree”)], dated \_\_\_\_\_, \_\_\_\_\_, Docket No. [\_\_\_\_\_], between the PRP and EPA, entered pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. § 9607 et seq. (“CERCLA”). This letter confirms the Company’s satisfaction of certain financial criteria, as set forth more fully below, that makes the Company eligible to utilize the financial test as financial assurance under the Consent Decree.

*[Fill out the following five paragraphs regarding CERCLA settlements, RCRA facilities, TSCA facilities, SDWA facilities, and associated financial assurance requirements. If the Company has no CERCLA settlement or RCRA/TSCA/SDWA facility obligations that belong in a particular paragraph, write “None” in the space indicated. For each settlement and facility, include its settlement Docket No. or EPA Identification Number, as the case may be, and the financial assurance dollar amount associated with such settlement and/or facility.]*

1. The dollar amount of financial assurance required by Paragraph [\_\_\_\_] of the Consent Decree and covered by the Company’s use of the financial test is [\$\_\_\_\_\_].
2. The Company is a signatory to the following CERCLA settlements (other than the Consent Decree) under which the Company is providing financial assurance to EPA through the use of a financial test. The total dollar amount of such financial assurance covered by a financial test is equal, in the aggregate, to [\$\_\_\_\_\_], and is shown for each such settlement as follows:
3. The Company is the owner and/or operator of the following facilities for which the Company has demonstrated financial assurance through a financial test, including but not limited to hazardous waste Treatment, Storage, and Disposal (“TSD”) facilities under

40 CFR parts 264 and 265, Municipal Solid Waste Landfill (“MSWLF”) facilities under 40 CFR part 258, Underground Injection Control (“UIC”) facilities under 40 CFR part 144, Underground Storage Tank (“UST”) facilities under 40 CFR part 280, and Polychlorinated Biphenyl (“PCB”) storage facilities under 40 CFR part 761. The total dollar amount of such financial assurance covered by a financial test is equal, in the aggregate, to [\$\_\_\_\_\_], and is shown for each such facility as follows:

4. The Company guarantees the CERCLA settlement obligations and/or the MSWLF, TSD, UIC, UST, PCB, and/or other facility obligations of the following guaranteed parties. The total dollar amount of such CERCLA settlement and regulated facility obligations so guaranteed is equal, in the aggregate, to [\$\_\_\_\_\_], and is shown for each such settlement and/or facility as follows:

5. The Company [insert “is required” or “is not required”] to file a Form 10K with the Securities and Exchange Commission (“SEC”) for the Company’s latest fiscal year.

6. The Company’s fiscal year ends on [month, day]. I hereby certify that the figures for the following items marked with an asterisk are derived from the Company’s independently audited, year-end financial statements for its latest completed fiscal year, ended [date], and further certify as follows:

A. The aggregate total of the dollar amounts shown in Paragraphs 1 through 4 above equals [\$\_\_\_\_\_].

\*B. Company’s total liabilities equal [if any portion of the aggregate dollar amount from line A is included in total liabilities, you may deduct the amount of that portion from this line and add that amount to lines C and D]: [\$\_\_\_\_\_]

\*C. Company’s tangible net worth equals: [\$\_\_\_\_\_]

\*D. Company’s net worth equals: [\$\_\_\_\_\_]

\*E. Company’s current assets equal: [\$\_\_\_\_\_]

\*F. Company’s current liabilities equal: [\$\_\_\_\_\_]

G. Company’s net working capital [line E minus line F] equals: [\$\_\_\_\_\_]

\*H. Sum of Company’s net income plus depreciation, depletion, and amortization equals: [\$\_\_\_\_\_]

\*I. Company’s total assets in the U.S. equal (required only if less than 90% of Company’s assets are located in the U.S.): [\$\_\_\_\_\_]

J. Is line C at least \$10 million? (Yes/No): [ \_\_\_\_\_]

K. Is line C at least 6 times line A? (Yes/No): [\_\_\_\_]

L. Is line G at least 6 times line A? (Yes/No): [\_\_\_\_]

\*M. Are at least 90% of Company's assets located in the U.S.? (Yes/No): [\_\_\_\_]  
If "No," complete line N.

N. Is line I at least 6 times line A? (Yes/No): [\_\_\_\_]

O. Is line B divided by line D less than 2.0? (Yes/No): [\_\_\_\_]

P. Is line H divided by line B greater than 0.1? (Yes/No): [\_\_\_\_]

Q. Is line E divided by line F greater than 1.5? (Yes/No): [\_\_\_\_]

I hereby certify that, to the best of my knowledge after thorough investigation, the information contained in this letter is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

\_\_\_\_\_ [Signature]

\_\_\_\_\_ [Name]

\_\_\_\_\_ [Title]

\_\_\_\_\_ [Date]

[NOTARY BLOCK]

**CERCLA Financial Assurance Financial Test:  
Sample CFO Letter (for Test Alternative 2)**

[PRP Letterhead]

[Address Block]

[Date]

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dear [\_\_\_\_\_]:

I am the chief financial officer of [name and address of PRP] (the “Company”). This letter is in support of the Company’s use of a financial test to demonstrate financial assurance for the obligations of the Company under that certain [Consent Decree (the “Consent Decree”)], dated \_\_\_\_\_, \_\_\_\_\_, Docket No. [\_\_\_\_\_], between the PRP and EPA, entered pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. § 9607 et seq. (“CERCLA”). This letter confirms the Company’s satisfaction of certain financial criteria, as set forth more fully below, that makes the Company eligible to utilize the financial test as financial assurance under the Consent Decree.

*[Fill out the following five paragraphs regarding CERCLA settlements, RCRA facilities, TSCA facilities, SDWA facilities, and associated financial assurance requirements. If the Company has no CERCLA settlement or RCRA/TSCA/SDWA facility obligations that belong in a particular paragraph, write “None” in the space indicated. For each settlement and facility, include its settlement Docket No. or EPA Identification Number, as the case may be, and the financial assurance dollar amount associated with such settlement and/or facility.]*

1. The dollar amount of financial assurance required by Paragraph [\_\_\_\_] of the Consent Decree and covered by the Company’s use of the financial test [\$\_\_\_\_\_].
2. The Company is a signatory to the following CERCLA settlements (other than the Consent Decree) under which the Company is providing financial assurance to EPA through the use of a financial test. The total dollar amount of such financial assurance covered by a financial test is equal, in the aggregate, to [\$\_\_\_\_\_], and is shown for each such settlement as follows:
3. The Company is the owner and/or operator of the following facilities for which the Company has demonstrated financial assurance through a financial test, including but not limited to hazardous waste Treatment, Storage, and Disposal (“TSD”) facilities under

40 CFR parts 264 and 265, Municipal Solid Waste Landfill (“MSWLF”) facilities under 40 CFR part 258, Underground Injection Control (“UIC”) facilities under 40 CFR part 144, Underground Storage Tank (“UST”) facilities under 40 CFR part 280, and Polychlorinated Biphenyl (“PCB”) storage facilities under 40 CFR part 761. The total dollar amount of such financial assurance covered by a financial test is equal, in the aggregate, to [\$\_\_\_\_\_], and is shown for each such facility as follows:

4. The Company guarantees the CERCLA settlement obligations and/or the MSWLF, TSD, UIC, UST, PCB, and/or other facility obligations of the following guaranteed parties. The total dollar amount of such CERCLA settlement and regulated facility obligations so guaranteed is equal, in the aggregate, to [\$\_\_\_\_\_], and is shown for each such settlement and/or facility as follows

5. The Company [insert “is required” or “is not required”] to file a Form 10K with the Securities and Exchange Commission (“SEC”) for the Company’s latest fiscal year.

6. The Company’s fiscal year ends on [month, day]. I hereby certify that the figures for the following items marked with an asterisk are derived from the Company’s independently audited, year-end financial statements for its latest completed fiscal year, ended [date], and further certify as follows:

A. The aggregate total of the dollar amounts shown in Paragraphs 1 through 4 above equals [\$\_\_\_\_\_].

B. The current rating of the Company’s senior unsecured debt is [AAA, AA, A, or BBB] as issued by Standard and Poor’s [-or- [Aaa, Aa, A or Baa] as issued by Moody’s Investor Services].

\*C. Company’s tangible net worth equals: [\$\_\_\_\_\_]

\*D. Company’s total assets in the U.S. equal (required only if less than 90% of Company’s assets are located in the U.S.): [\$\_\_\_\_\_]

E. Is line C at least 6 times line A? (Yes/No): [ \_\_\_\_\_]

F. Is line C at least \$10 million? (Yes/No): [\_\_\_\_\_]

G. Are at least 90% of Company’s assets located in the U.S.? (Yes/No): [\_\_\_\_\_]  
If “No,” complete line H.

H. Is line D at least 6 times line A? (Yes/No): [\_\_\_\_\_]

I hereby certify that, to the best of my knowledge after thorough investigation, the information contained in this letter is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

\_\_\_\_\_ [Signature]

\_\_\_\_\_ [Name]

\_\_\_\_\_ [Title]

\_\_\_\_\_ [Date]

[NOTARY BLOCK]

**EXHIBIT B (CPA Report)**



**CERCLA Financial Assurance Financial Test:  
Sample CPA Report (for Test Alternative 1)**

[CPA Letterhead]

**Independent Accountants' Report  
on Applying Agreed-Upon Procedures**

To the Board of Directors and Management of [\_\_\_\_\_]:

We have performed the procedures outlined below, which were agreed to by [PRP] (the "Company"), to assist the Company in confirming selected financial data contained in the attached letter from [\_\_\_\_\_], the Company's Chief Financial Officer, dated [\_\_\_\_\_], to the Regional Administrator, United States Environmental Protection Agency, Region [\_\_] (the "CFO Letter"). We have been advised by the Company that the CFO Letter has been or will be submitted to the United States Environmental Protection Agency ("EPA") in support of the Company's use of a financial test to demonstrate financial assurance for the Company's obligations under that certain Consent Decree (the "Consent Decree"), dated \_\_\_\_\_, \_\_\_\_\_, Docket No. [\_\_\_\_\_], between the Company and EPA. The procedures outlined below were performed solely to assist the Company in complying with the financial assurance requirements contained in the Consent Decree.

This agreed-upon procedures engagement was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. The sufficiency of these procedures is solely the responsibility of those parties specified in this report. Consequently, we make no representation regarding the sufficiency of the procedures described below either for the purpose for which this report has been requested or for any other purpose.

The procedures we performed and our associated findings are as follows:

1. We confirm that we have audited the consolidated financial statements of the Company as of and for the fiscal year ended [December 31, 200\_] in accordance with U.S. generally accepted accounting principles (such audited, consolidated financial statements, the "Audited Financials"). Our report dated [\_\_\_\_\_], with respect thereto, is included in the Company's [200\_] Annual Report on Form 10-K.
2. Using data set forth in the Audited Financials, we calculated the amount of the Company's total liabilities as of [December 31, 200\_] as [\$\_\_\_\_\_], by [adding total current liabilities of [\$\_\_\_\_\_] to total non-current liabilities of [\$\_\_\_\_\_]]. We compared the amount of the Company's total liabilities as so calculated with the amount set forth in Line 6(B) of the CFO Letter ("Total Liabilities"), and found such amounts to be in agreement.

3. Using data set forth in the Audited Financials, we calculated the amount of the Company's tangible net worth as of [December 31, 200\_] as [\$\_\_\_\_\_], by [subtracting the amount of net intangible assets of [\$\_\_\_\_\_] from the amount of total stockholders' equity of [\$\_\_\_\_\_]]. We compared the amount of the Company's tangible net worth as so calculated with the amount set forth in Line 6(C) of the CFO Letter ("Tangible Net Worth"), and found such amounts to be in agreement.
4. We compared the amount of the Company's net worth as of [December 31, 200\_], as defined and set forth in the Audited Financials and as calculated therein as [\$\_\_\_\_\_], with the amount set forth in Line 6(D) of the CFO Letter ("Net Worth"), and found such amounts to be in agreement.
5. We compared the amount of the Company's total current assets as of [December 31, 200\_], as defined and set forth in the Audited Financials and as calculated therein as [\$\_\_\_\_\_], with the amount set forth in Line 6(E) of the CFO Letter ("Current Assets"), and found such amounts to be in agreement.
6. We compared the amount of the Company's total current liabilities as of [December 31, 200\_], as defined and set forth in the Audited Financials and as calculated therein as [\$\_\_\_\_\_], with the amount set forth in Line 6(F) of the CFO Letter ("Current Liabilities"), and found such amounts to be in agreement.
7. Using data set forth in the Audited Financials, we calculated the amount of the Company's net working capital as of [December 31, 200\_] as [\$\_\_\_\_\_], by [subtracting total current liabilities of [\$\_\_\_\_\_] from total current assets of [\$\_\_\_\_\_]]. We compared the amount of the Company's net working capital as so calculated with the amount set forth in Line 6(G) of the CFO Letter ("Net Working Capital"), and found such amounts to be in agreement.
8. Using data set forth in the Audited Financials, we calculated the sum of the Company's net income plus depreciation, depletion, and amortization as of [December 31, 200\_] as [\$\_\_\_\_\_], by [adding depreciation, depletion, and amortization of property and intangibles of [\$\_\_\_\_\_] to net income of [\$\_\_\_\_\_]]. We compared the sum of the Company's net income plus depreciation, depletion, and amortization as so calculated with the amount set forth in Line 6(H) of the CFO Letter ("Net Income Plus Depreciation, Depletion, and Amortization"), and found such amounts to be in agreement.

9. We compared the amount of the Company's total assets located in the United States as of [December 31, 200\_] of [\$\_\_\_\_\_] (as such amount was derived by the Company from its underlying accounting records that support the Audited Financials and notified to us in writing) with the amount set forth in Line 6(I) of the CFO Letter, and found such amounts to be in agreement. **OR** We calculated the percentage of Company assets located in the United States as of [December 31, 200\_] by dividing the amount of the Company's total assets located in the United States of [\$\_\_\_\_\_] (as such amount was derived by the Company from its underlying accounting records that support the Audited Financials and notified to us in writing) by the amount of the Company's total assets as defined and set forth in the Audited Financials, and found such percentage to be greater than 90%.

10. Our calculation of the amount of the Company's tangible net worth (as set forth in Line 3 above) is [greater to or equal than] [less than] \$10 million.

11. The dollar amount identified in Line 6(A) of the CFO Letter is hereinafter referred to as the "Financial Assurance Amount." Our calculation of the amount of the Company's tangible net worth (as set forth in Line 3 above) is [greater to or equal than] [less than] an amount calculated as six times the Financial Assurance Amount.

12. Our calculation of the amount of the Company's net working capital (as set forth in Line 7 above) is [greater to or equal than] [less than] an amount calculated as six times the Financial Assurance Amount.

13. [Complete Line 13 only if less than 90% of Company's assets are located in the United States] Our calculation of the amount of the Company's total assets located in the United States (as set forth in Line 9 above) is [greater to or equal than] [less than] an amount calculated as six times the Financial Assurance Amount.

14. Our calculation of the amount of the Company's total liabilities (as set forth in Line 2 above) divided by our calculation of the amount of the Company's net worth (as set forth in Line 4 above) is [greater than] [less than] 2.0.

15. Our calculation of the sum of the Company's net income plus depreciation, depletion, and amortization (as set forth in Line 8 above) divided by our calculation of the amount of the Company's total liabilities (as set forth in Line 2 above) is [greater than] [less than] 0.1.

16. Our calculation of the amount of the Company's total current assets (as set forth in Line 5 above) divided by our calculation of the amount of the Company's total current liabilities (as set forth in Line 6 above) is [greater than] [less than] 1.5.

The foregoing agreed-upon procedures do not constitute an audit of the Company's financial statements or any part thereof, the objective of which is the expression of

opinion on the financial statements or a part thereof. Accordingly, we do not express such an opinion. Had be performed additional procedures, other matters might have come to our attention that would have been reported to you.

This report is intended solely for the information and use of the Board of Directors and Management of the Company and is not intended to be and should not be used by anyone other than these specified parties; provided, however, that we acknowledge and agree that the Company may provide this report to the United States Environmental Protection Agency in support of the Company's financial assurance demonstration under the Consent Decree.

\_\_\_\_\_ [Signature]

\_\_\_\_\_ [Name]

\_\_\_\_\_ [Date]

**CERCLA Financial Assurance Financial Test:  
Sample CPA Report (for Test Alternative 2)**

[CPA Letterhead]

**Independent Accountants' Report  
on Applying Agreed-Upon Procedures**

To the Board of Directors and Management of [\_\_\_\_\_]:

We have performed the procedures outlined below, which were agreed to by [PRP] (the "Company"), to assist the Company in confirming selected financial data contained in the attached letter from [\_\_\_\_\_], the Company's Chief Financial Officer, dated [\_\_\_\_\_], to the Regional Administrator, United States Environmental Protection Agency, Region [\_\_] (the "CFO Letter"). We have been advised by the Company that the CFO Letter has been or will be submitted to the United States Environmental Protection Agency ("EPA") in support of the Company's use of a financial test to demonstrate financial assurance for the Company's obligations under that certain Consent Decree (the "Consent Decree"), dated \_\_\_\_\_, \_\_\_\_\_, Docket No. [\_\_\_\_\_], between the Company and EPA. The procedures outlined below were performed solely to assist the Company in complying with the financial assurance requirements contained in the Consent Decree.

This agreed-upon procedures engagement was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. The sufficiency of these procedures is solely the responsibility of those parties specified in this report. Consequently, we make no representation regarding the sufficiency of the procedures described below either for the purpose for which this report has been requested or for any other purpose.

The procedures we performed and our associated findings are as follows:

1. We confirm that we have audited the consolidated financial statements of the Company as of and for the fiscal year ended [December 31, 200\_] in accordance with U.S. generally accepted accounting principles (such audited, consolidated financial statements, the "Audited Financials"). Our report dated [\_\_\_\_\_], with respect thereto, is included in the Company's [200\_] Annual Report on Form 10-K.
2. Using data set forth in the Audited Financials, we calculated the amount of the Company's tangible net worth as of [December 31, 200\_] as [\$\_\_\_\_\_], by [subtracting the amount of net intangible assets of [\$\_\_\_\_\_] from the amount of total stockholders' equity of [\$\_\_\_\_\_]]. We compared the amount of the Company's tangible net worth as so calculated with the amount set forth in Line 6(C) of the CFO Letter ("Tangible Net Worth"), and found such amounts to be in agreement.

3. We compared the amount of the Company's total assets located in the United States as of [December 31, 200\_] of [\$\_\_\_\_\_] (as such amount was derived by the Company from its underlying accounting records that support the Audited Financials and notified to us in writing) with the amount set forth in Line 6(D) of the CFO Letter, and found such amounts to be in agreement. **OR** We calculated the percentage of Company assets located in the United States as of [December 31, 200\_] by dividing the amount of the Company's total assets located in the United States of [\$\_\_\_\_\_] (as such amount was derived by the Company from its underlying accounting records that support the Audited Financials and notified to us in writing) by the amount of the Company's total assets as defined and set forth in the Audited Financials, and found such percentage to be greater than 90%.

4. Our calculation of the amount of the Company's tangible net worth (as set forth in Line 2 above) is [greater to or equal than] [less than] \$10 million.

5. The dollar amount identified in Line 6(A) of the CFO Letter is hereinafter referred to as the "Financial Assurance Amount." Our calculation of the amount of the Company's tangible net worth (as set forth in Line 2 above) is [greater to or equal than] [less than] an amount calculated as six times the Financial Assurance Amount.

6. [Complete Line 6 only if less than 90% of Company's assets are located in the United States] Our calculation of the amount of the Company's total assets located in the United States (as set forth in Line 3 above) is [greater to or equal than] [less than] an amount calculated as six times the Financial Assurance Amount.

The foregoing agreed-upon procedures do not constitute an audit of the Company's financial statements or any part thereof, the objective of which is the expression of opinion on the financial statements or a part thereof. Accordingly, we do not express such an opinion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

This report is intended solely for the information and use of the Board of Directors and Management of the Company and is not intended to be and should not be used by anyone other than these specified parties; provided, however, that we acknowledge and agree that the Company may provide this report to the United States Environmental Protection Agency in support of the Company's financial assurance demonstration under the Consent Decree.

\_\_\_\_\_ [Signature]

\_\_\_\_\_ [Name]

\_\_\_\_\_ [Date]